Risky Behaviour: Psychological Mechanisms Underpinning Social Media Users' Engagement

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Dawn Beverley Branley

Social media has received considerable media attention due to concerns that its use may be linked to risky behaviours, e.g., sharing personal information (Tow, Dell, & Venable, 2010), sexual communication with strangers (Baumgartner, Valkenburg, & Peter, 2010b) and extreme communities that may encourage self-harm and eating disorders (Lewis, Heath, Sornberger, & Arbuthnott, 2012). This thesis identifies who is using social media, what factors influence usage and willingness to engage in online risk behaviour, whether there is a link between content viewed on social media and offline risk behaviour, and the role of extreme communities for users. A mixed method approach is applied to survey and social media data. The first part of the thesis identifies younger users and female users as those most intensively using social media (partially explained by stronger social norms and experiencing more positive outcomes). Attitudes towards risk takers, norms and past behaviour predict willingness to engage in online risk. There is also a link between the content that users view on social media and engaging in offline risk behaviour; this link was stronger for male users. However no age differences were found. The second half of this thesis focuses on online communication around eating disorders and self-harm. Although some content did encourage these behaviours, the majority of the content was of a positive nature and appeared to provide social support for users. These findings suggest that the media portrayal of social media may be misleading. Two important outcomes are highlighted; Firstly, younger users may not necessarily be more vulnerable and, second, that care is needed to ensure that interventions respect the positive side of social media use and limit risks without disrupting potentially positive social networks. Implications include the guiding of such interventions, future research and policy.

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Statement of Copyright

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Preface

This thesis investigates the psychological mechanisms underpinning social media users' engagement in potentially risky behaviour and the sharing of associated content on social media platforms. Online risk behaviour is defined as online behaviour (including the sharing/viewing of content) that has the potential for negative consequences for the individual involved and/or other social media users, whether these consequences are of a physical, mental, social or financial nature. This can include behaviours such as revealing too much personal information, communicating about eating disorders or self-harm, engaging in potentially dangerous pranks to share the videos online, etc.

Part I

The first section of this thesis consists of three phased areas of study based on the data from a comprehensive online survey of over 1200 social media users. The three quantitative studies aimed to identify: the most intensive users of social media and factors that influence usage (Study 1, phase 1), factors which predict willingness to engage in online risk behaviour (Study 1, phase 2), and evidence of a link between content that users are exposed to on social media and users' offline risk behaviour (Study 1, phase 3).

Phase one investigates who is using social media and their reasons for doing so. This phase identifies age and gender differences in intensity of social media use: identifying younger users and female users as those using social media most intensively. The findings illustrate how younger users appear to use social media more due to stronger social norms and higher computer literacy, whilst females tend to use social media more due to stronger descriptive social norms and experiencing more positive outcomes. Age and gender differences were also found in relation to motivation for use, with younger and female users more likely to use social media as a form of social enhancement (i.e., to enhance existing offline relationships). In contrast, older users and male users were more likely to use social media as a form of social compensation (i.e., creating new connections) and/or for utilitarian reasons (i.e., as a means to an end rather than simply for social interaction).

Phase two tests the suitability of the Prototype Willingness Model (PWM: Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008) for explaining willingness to engage in online risky behaviours. The PWM is a successor of the Theory of Reasoned Action (TRA: Fishbein & Ajzen, 1975) and is intended to be a more accurate model for explaining adolescent 'every day' risk taking behaviour through the incorporation of both a reasoned and less-reasoned pathway to willingness to engage in risk. The findings show that the

PWM improves the predictive ability in comparison to the TRA and although most effective at predictive adolescents' willingness to engage in risk, the model still appears to have value for predicting older users behaviour. Attitudes towards risk, social norms, past behaviour and positive perceptions of risk takers were all found to be predictors of willingness to engage in online risky behaviour.

Phase three investigates the existence of a link between content viewed on social media and users' offline behaviour. There are public and governmental concerns that social media may encourage risk taking in the offline environment. This phase of study demonstrates that a relationship between online content and offline behaviour does exist. However, contrary to media speculation that younger users are most at risk of this influence, age did not have an effect upon the strength of the relationship between content viewed online and offline behaviour. Therefore younger users do not appear more vulnerable to the effects of online content than their older counterparts. Conversely, gender does appear to effect the relationship between social media content and behaviour with a stronger effect found for male users; Suggesting that male users may be more vulnerable to negative effects of social media content, and/or use social media content to find material related to their offline risk taking. The findings provide preliminary evidence that social media use may influence offline behaviour.

Part II

Having identified the most intensive users of social media, which users engage in associated risk behaviours and predictive factors of risk taking, the second half of the thesis concentrates on online communication in relation to two specific risk behaviours: disordered eating (Study 2) and self-harm (Study 3). Online communities which potentially encourage engagement in disordered eating/eating disorders (ED) or self-harm (SH) behaviour are a cause of public concern and have received heavy media attention over the last decade (e.g., "SH sites and cyberbullying: the threat to children from web 's dark side", The Guardian, 11th March 2014; "Social media helps fuel some EDs", The Journal News, 1st June 2014).

Studies two and three aimed to identify what type of ED/SH content is present on social media i.e., whether it is generally positive (e.g., content encouraging recovery) or negative (e.g., encouraging the risk behaviour in others or sharing potentially triggering material) and also to identify whether there are user differences between those who share negative material and those who share more positive material. The studies also aimed to identify reasons why users share this material online, e.g., seeking/offering support, raising awareness, challenging social norms, expressing humour etc. Both studies focus upon two popular social media platforms that have been linked to ED and SH behaviours in the

press: Twitter and Tumblr (e.g., "Becoming what you don't eat" [Twitter], The Daily Iowan, 26th June 2014, "Girl posted SH photos online before train jump" [Tumblr], BBC News, 14th January 2014). Data was collected over a 24-hour period resulting in a database of over 12,000 tweets and 73,000 Tumblr blog posts, from which a random sample was collected for each of the studies. Within both studies, the data was analysed using a mixed methods approach and included between-platform comparisons to identify any differences in content or user motivation.

Study two challenges the perception of ED content on social media as purely negative, with positive content also present across both platforms. Positive reasons for sharing ED content include encouraging recovery (in the user themselves and/or others), providing social support and empathy to others suffering from ED, raising awareness about ED in the general population and challenging social norms which may contribute to the development of ED in vulnerable individuals (e.g., challenging the notion of thinness as the 'ideal'). Evidence of pro-anorexia content (i.e., content encouraging ED behaviour) was found across both platforms, however this was in the minority and often challenged by other users who disagreed with any glorification of ED behaviour.

Study three also revealed a positive element to the sharing of SH content on social media, with supportive posts being shared more than content encouraging SH behaviour. Positive reasons for sharing SH content include encouraging recovery (in the user themselves and/or others), providing social support and empathy to others suffering from SH, and raising awareness about SH in the wider population. SH dedicated blogs were in the minority, and those that did exist tended to be of a positive, pro-recovery nature. There was very little evidence of pro-SH content across both platforms.

Overall, studies two and three suggest that social media may play a positive role for the majority of users sharing ED and SH related posts.

In summary, this thesis:

- Identifies the most intensive user groups on social media and the factors that influence intensity of use.
- Identifies how users perceive risk takers and risk behaviour and how these perceptions affect their own willingness to engage in risk (as explained by the Prototype Willingness Model).
- Establishes that viewing social media content depicting risk behaviour appears to be related to users' own offline behaviour.
- Identifies the type of ED and SH content being shared on Twitter and Tumblr and user motivations for sharing.

The findings can aid the design of future research, help to guide potential interventions and inform policy through increased understanding of user motivations for engaging in risk, the factors that influence users risk perception and behaviour, and the identification of potentially vulnerable user groups.

The results highlight an often-underappreciated positive aspect of communication around risk behaviours on social media. This challenges the extreme negative view often portrayed by the media and suggests that interventions should be designed to limit risks without disrupting potentially valuable sources of support.

1. Introduction

Social media is a term used to refer to specific online platforms that include Social Network Sites (SNSs) such as Facebook; social platforms for picture sharing such as Instagram; video content hosted by YouTube; and other networks, social platforms and smart mobile apps that allow users to share content and set up user profiles. Defining the main characteristics forms part of the formative discussion in the main body of this chapter (see section 1.2). Social media that allows access to online platforms and software is used by around 2 billion people worldwide and is estimated to grow to almost 2.5 billion in the next 3 years ("Statista: Number of worldwide social network users 2010-2018," 2015). The use of this technology has been linked to risky online behaviour including but not limited to: information disclosure, risky sexual behaviour, dangerous pranks and negative health behaviours (Baumgartner, Valkenburg, & Peter, 2010b; Dunlop, More, & Romer, 2011; Livingstone, 2008; Sonia Livingstone & Helsper, 2007). Young people in particular have been identified as a high-risk group given their vulnerability in terms of personal information disclosure, desire for experimentation, and lack of awareness of the longer-term consequences of social exchanges that are promoted through the use of social media (see Hoofnagle, King, Li, & Turow, 2010; Livingstone & Helsper, 2010; Livingstone, 2008; Mitchell, Wolak, & Finkelhor, 2008). Despite public speculation and countless media headlines, such as "Anti-social media is causing our young children to turn anorexic and self-harm" (The Mirror, 19 March 2015), the context and nature of the relationship between social media and risky behaviour is not understood. This research addresses an important need to understand the psychological mechanisms underpinning online risk taking, including the identification of factors which influence users' willingness to engage in risk (e.g., context, social influence and individual differences). This research also investigates the benefits that users associate with these behaviours. The findings will aid in the identification of user groups who are particularly 'at-risk' and have implications both inside and outside of academia including broadening accurate public perception, as well as equipping organisations and individuals with the necessary information to accurately identify and address risky behaviour that is mediated through social media.

This first chapter begins by providing some background information on Web 2.0 - the platform from which social media first emerged. This is followed by the definition of social media and information on user demographics. Focus then turns to why social media has been linked to risk behaviour and the chapter finishes with an overview of the research included in the first section of this thesis (Studies 1-3).

1.1. Web 2.0

As a term 'social media' represents a popular cultural reference in the media with over 3000 headlines within the UK news in the last month alone (Nexis UK, 2015). It is also increasingly featured in academic articles. However, that does not mean to suggest that definition is easy. In order to understand what constitutes social media it is beneficial to begin with some background knowledge of the platform from which online social platforms first emerged, the Web 2.0.

Web 2.0 is a common term used to describe the shift towards a more interactive world wide web. Web 2.0 does not represent any technological hardware breakthroughs or upgrades to the web platform and therefore there is no hard boundary where Web 1.0 ends and Web 2.0 begins (Kaplan & Haenlein, 2010; O'Reilly, 2007). The term was created in 1999 by Dale Docherty as a concept that represents a set of core principles and practices that aim to encompass and describe the internet as we experience it today; Where content is no longer created and published solely by individuals, but rather is continuously modified by all users in a participatory and collaborative fashion (O'Reilly, 2007).

Although occasionally there has been a lack of consensus in reaching a clear definition (Courtois, Mechant, De Marez, & Verleye, 2009; Madden & Fox, 2006) most researchers do agree - albeit to differing degrees - upon the main principles of collaboration and collective intelligence; this incorporates interaction between users across multiple online environments, and users having more control over content and data (Alexander & Levine, 2008; Hardey, 2007; Kaplan & Haenlein, 2010; Madden & Fox, 2006). Web 2.0 allows users to explore the internet as a platform and integrate several layers of software in the same space without being restricted to one-page-at-a-time navigation, therefore providing the foundations for social media (Courtois et al., 2009; Kaplan & Haenlein, 2010). Characterised as the 'social web', Web 2.0 goes beyond the traditional browser based, point-and-click static web page layout of the now retrospectively termed 'Web 1.0' (see Hardey, 2011b) to deliver "rich user experiences" (O'Reilly, 2007) and the proliferation of a range of social platforms which allow "individuals and communities to gather, communicate, share and in some cases collaborate or play" (boyd & Ellison, 2008).

1.2. Defining social media

Having established Web 2.0 as the "platform for the evolution of social media" (Kaplan & Haenlein, 2010) it is necessary to provide a working definition and context for what constitutes 'social media'.

The terms social media and social networking are often used interchangeably in the literature, however whilst some social media are created with the primary purpose of networking, e.g., Facebook and LinkedIn, the same does not apply for all, e.g., YouTube and Flickr, and others share both these characteristics, e.g., Instagram. Therefore, whilst social media may be a natural integration of the site, this may not be the primary purpose for users, for example sites like YouTube and Flickr are designed primarily for sharing video content and photographs although some networking may arise through the publication of users comments and sharing of content with friends on the site (Lange, 2007).

Social theorists boyd & Ellison (2007) identified that 'social networking' implies a primary purpose of networking; identifying this as a limitation they opted to use the slight change in terminology - 'Social Network Sites' to signify that they wished to include a broader range of sites. Their definition of a social network site is one that meets three criteria: 1) allows the construction of a public or semi-public profile within a bounded system, 2) allows the user to articulate a list of other users with whom they share a connection, and 3) allows users to view their list of connections and those made by others within the system. In agreement with boyd & Ellison (2007) this research places emphasis upon the *social* aspect of social media and the formation of personal user profiles that are used to curate and maintain related content that is shared with 'friends' and acquaintances. Personal profiles are a key component of this media enabling users to include, or exclude, other users through various preferences and settings that are managed through the software. For example, social media applications contain actions such as friending/unfriending (e.g., Facebook), subscribing/unsubscribing (e.g., YouTube), following/unfollowing (e.g., Twitter), and accepting/blocking other users (e.g., Google+).

In order to provide a clean-cut context for social media, it is helpful to underscore the practice of *sharing of information* that is at the heart of the activities and which connects individuals, organisations and commercial businesses to individualised flows of information (Bauman, 2001, 2007; Beck & Beck-Gernsheim, 2002). The participatory and collaborative nature of social media distinguishes these from more traditional forms of technology and media that have been based largely upon users receiving one-way 'broadcast' information without the opportunity to interact or personalise the content, such as television, radio, printed media and 'Web 1.0' websites. A comparison of 'Web 1.0' and social media can be illustrated using Britannica Online ('Web 1.0') and Wikipedia (social media); both are encyclopaedia websites however, unlike Wikipedia, Britannica Online does not allow users to interact with or personalise the content instead information is presented in a one-way direction from the site to the user (Note – as to be expected due to the constantly updating nature of the internet, Britannica Online has

started to incorporate some Web 2.0 features through the inclusion of a blog section and a Twitter feed).

In light of the above, and for the purpose of this research social media is defined as digital applications that enable people (or organisations) who have a personal profile, to share information and connect to one another. This information can be in the form of 'status updates', messages, news, data, images, audio, maps, comments, video content and so on.

Beer (2008) has criticized the adoption of a broad definition and argues that trying to create an umbrella term that clusters together all of the online platforms that share some similarities (e.g., making an online profile) but also share many differences (e.g., the primary aim of the website whether that is networking, video streaming etc.) is detrimental to our understanding of the online world. Beer proposed that the different types of platform should be classified with their own labels. The current research respects this need for separate classification and acknowledges that the simplicity of one broad category can result in the loss of our ability to differentiate between the different types of online participatory platforms. This may hinder our advancement of knowledge as we may miss crucial distinctions between the user groups of these subcategories and oversimplify our view of the online environment. Therefore although the definition of social media provides an overarching principle, throughout this research separate classifications of sub-types are recognised.

The sub-types of social media considered within this research are based upon some of those identified by Kaplan and Haenlein (2010) in their exploration of the opportunities and challenges of social media. Kaplan and Haenlein describe social media as "a group of Internet-based applications which build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content" (p. 61). They identify six distinct categories: *blogs* (e.g., Tumblr, WordPress, LiveJournal), *collaborative projects* (e.g., Wikipedia), *social networking sites* (e.g., Facebook, LinkedIn), *content communities* (e.g., YouTube, Instagram, Pinterest), *virtual social worlds* (e.g., SecondLife), and *virtual game worlds* (e.g., World of Warcraft). The current research excludes the latter two categories, *virtual social worlds* and *virtual gaming worlds*, because they involve elements of anonymity, fantasy and role play not traditionally associated with social media where there is generally an expectation that user profiles are representative of the users 'real' (offline) identity (Back et al., 2010; Hardey, 2011b). In comparison to more traditional social media sites, virtual social worlds and virtual gaming provide environments were high levels of de-individualisation may occur. Deindividualisation is when "individuals are not seen or paid attention to as individuals" (Festinger, Pepitone, & Newcomb, 1952, p. 389) . Due to high degrees of anonymity (or at least perceived anonymity), group members are more likely to do things they would usually restrain

themselves from doing. For example, members may be more likely to engage in none socially desirable behaviour. However, this is not the focus of the current research that seeks to investigate the effect of mainstream, non-gaming/non-fantasy online environments. Social media platforms are increasingly tied to an individual's offline identity, therefore decreasing anonymity and increasing self-awareness. Although it is expected that some de-individualisation may occur in the social media environments included in this research (refer to section 6.6.1), it is to a much lesser extent than would be expected on fantasy/gaming platforms.

Collaborative projects (e.g., Wikipedia) are also excluded as they consist mainly of 'one-way contributions' from users rather than social interaction. Therefore within the current research, digital platforms must meet the following criteria to be classified as social media:

1. Require the creation and cultivation of a user profile that is grounded within reality
2. Place an emphasis upon information sharing between users

In accordance with the chosen definition and criteria, the current research includes the following digital platforms:

1. Social networking sites (e.g., Facebook, MySpace, Google+, LinkedIn)
2. Blogging and microblogging platforms (e.g., Twitter, Tumblr, WordPress)
3. Photo and video-sharing platforms (e.g., Flickr, Instagram, Pinterest, YouTube)
4. Location-based platforms (e.g., FourSquare, Google Latitude)

Of course, this is a rapidly developing landscape so it would be misleading to overstate any static boundaries of social media. Whilst these 'popular' applications may develop and change over time, it is predicted that the key elements of *information sharing* and *user profiles* will remain.

1.3. Prevalence of social media use and user demographics

Social media is becoming part of everyday life; many educational institutions, charities, government bodies and public figures now have social media profiles. The engagement of Prince William to Kate Middleton was officially announced via microblogging site Twitter (Clarence House, 2010) and there was much excitement amongst the media when the British monarchy joined Facebook (Nikkhah, 2010). Politicians are also now recognising the benefits of having a digital presence online, for instance at the time of writing, US president Barack Obama is the 3rd most popular member on Twitter (Twitaholic, accessed 19th March 2015).

Social media is often said to be displacing other forms of online communication (e.g., email and chatrooms), incorporating others (e.g., instant messaging, blogging) and replacing some offline interaction and telephone communication (Livingstone, 2008). As a result many researchers now regard the internet and/or social media as an integrated part of life thoroughly embedded in the routines of everyday life, a 'way of being' (Albrechtslund & Albrechtslund, 2014; Hardey, 2011b; Livingstone, 2008).

While many social media applications are open to a wide range of users, others are marketed more specifically, for example LinkedIn targets business and academic users who wish to use the website as a means of professional networking. With the wide range of social media applications and functions, it is not surprising that all age groups are adopting and utilising such technology. At the advent of Web 2.0, social media was thought to be dominated by the pioneers of new technology – chief amongst them adolescents (Lenhart, Smith, & Zickuhr, 2010). However, in recent years this has changed dramatically with a considerable growth in the number of adults using social media (Hampton, Goulet, Rainie, & Purcell, 2011; "Royal Pingdom: Social network demographics," 2012) and usage has continued to increase for all age groups (Figure 1.1).

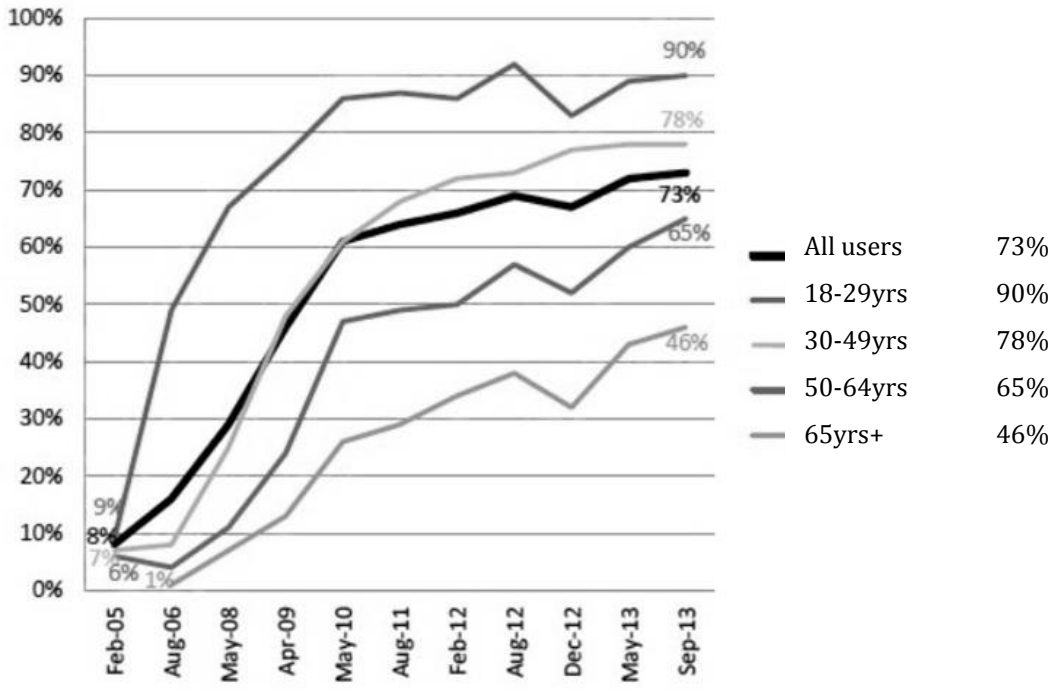

Figure 1.1. Social networking site use by age group (% of internet users in each age group who use social networking sites). Source: Pew Research Center's Internet Project Library Survey, July 2013. N = 5112 adult (18yrs+) internet users.

Recent research from the Pew Internet Project (2015) found no significant difference between the percentage of internet users who use social networking in the 18-29 years

(89%) and 30-49 (82%) year age groups. Therefore, although adolescents and younger adults are still a key focus for social media research, particularly as social media has become an integral part of their lives (Hardey, 2011b; Smahel, Helsper, Green, Kalmus, & Blinka, 2012), it is also important to extend research to all age groups in order to fully investigate the impact of social media use. The current research addresses this by including all ages over 13 years (the legal minimum for using most social media applications, e.g., Facebook).

There have been mixed findings regarding gender differences. Some studies suggesting that there is no overall gender difference in social media use, e.g., the Pew Internet Project (2015) suggests no significant difference in the percentage of male (72%) and female (76%) internet users using social media. However, other studies suggest that there are significantly more females than males using social media (See Kimbrough, Guadagno, Muscanell, & Dill, 2013). In addition, some studies suggest that there are gender differences in the specific platforms that users choose, e.g., more female users on Pinterest and Facebook (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015) but more male users on Google+ ("Social Demographics: Who's Using Today's Biggest Networks?," 2012) - potentially indicating that there are differences in the way in which the genders interact with social media. Gender differences are investigated and discussed in more detail in Chapter 3.

1.4. Links to risk behaviour and 'media panic'

For the purpose of this research, risk behaviour is defined as any behaviour that involves the potential for a negative consequence or loss to the individual(s) involved - whether this is health-related, social, financial or otherwise (Baumgartner, Valkenburg, & Peter, 2010a; Furby & Beyth-Marom, 1992). In accordance with this definition, many online behaviours can be described as risky, e.g., revealing personal information (Gross, Acquisti, & Iii, 2005; Hoofnagle et al., 2010; Tow et al., 2010), arranging to meet someone face-to-face who was first met online (Livingstone & Helsper, 2007), and engaging in risky online sexual behaviour (defined by Baumgartner et al. as "the exchange of intimate, sexually insinuating information or material with someone exclusively known online", pg. 440).

It is not the behaviours per say but the potential consequences that define behaviours as 'risky' and it is those consequences that can have a negative impact on the individual(s) involved. Some of the risks linked to social media include: sexual solicitation and harassment (Baumgartner et al., 2010a, 2010b; Mitchell et al., 2008), sexually transmitted diseases (Bobkowski, Brown, & Neffa, 2011; Rice, Monro, Barman-Adhikari, & Young, 2010), antisocial behaviour (Reilly, 2011), suicide and suicide ideation (Dunlop et al.,

2011; Luxton, June, & Fairall, 2012), self-harm (Lewis, Heath, St Denis, & Noble, 2011; Potera, 2011), cyberbullying and cyber-victimization (Li, 2007; Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2011; Patchin & Hinduja, 2010; Slonje & Smith, 2008), substance use and alcoholism (Beullens & Schepers, 2013); eating disorders (Stonebridge, 2011), regret (Madden, 2012), and employee dismissal (Hinduja & Patchin, 2008).

There are countless online sources dedicated to providing information on negative health behaviours, for example EDs, SH, unsafe sex, drug use and suicide. Whilst many of these resources aim to discourage these behaviours and offer help and support to those trying to overcome such behaviours, there are also many extreme communities or 'pro-' sites (e.g., *pro*-anorexia and *pro*-SH sites) which actively encourage users to engage in these behaviours and even offer instruction on how to do so (Alao, Soderberg, Pohl, & Alao, 2006; Bell, 2007; Lewis & Arbuthnott, 2012). This is not a new phenomenon, extreme sites have existed for years (Borzekowski, 2006; Wilson, Peebles, Hardy, & Litt, 2006). However the concern is that this information is now being shared through social media which by its very nature is a more accessible, more interactive, more immersive form of gaining and sharing information and the effects that this may have on users are still unknown (Litt & Stock, 2011).

In addition to extreme websites, mass media headlines often speculate of links between social media use and dangerous trends or pranks. For example, 'vodka eyeballing' refers to the attempt to 'drink' alcohol through the eyeball by holding a shot glass up to the eye. The media has expressed concerns over videos of this prank being shared online (e.g., Bates, 2011; Davies, 2010). Similarly, in recent years the 'choking game' craze has hit the headlines with youths sharing online videos of how to induce fainting (in pursuit of an alleged brief feeling of euphoria upon regaining consciousness); numerous deaths have now been linked to this craze (Burley, 2012; Farberov, 2012; "Games Adolescents Shouldn't Play," 2013; Linkletter, Gordon, & Dooley, 2010). Again, these pranks are not new behaviours but the concern is that content shared via social media may exacerbate the spread of the behaviour. Frequent electronic media communication, including social media use, has been linked to higher adolescent substance use (tobacco, alcohol and cannabis) but the nature of this link is not yet known (Gommans et al., 2015). Compared to exposure to risk content through other forms of media (e.g., TV and music video) there are far fewer studies around social media, despite its widespread use (Tucker, Miles, & D'Amico, 2013).

Some researchers have suggested that social media may not be as negative as portrayed by the media. Livingstone (2008) states:

> Media panics amplify the public anxieties associated with social networking. The 'MySpace generation', they suggest, has no sense of privacy or shame. One attention-getting headline read: 'Generation shock finds liberty online: the children of the internet age are ready to bare their bodies and souls in a way their parents never could' (Sunday Times, 2007). Another claimed: 'Kids today. They have no sense of shame. They have no sense of privacy' (Nussbaum, 2007). Moreover, social networkers are supposedly wholly narcissistic: 'MySpace is about me, me, me, and look at me and look at me' (Fairfax Digital News, 2007). In short, it is commonly held that at best, social networking is time-wasting and socially isolating, and at worst it allows paedophiles to groom children in their bedroom or sees teenagers lured into suicide pacts while parents think they are doing their homework. (p. 395).

This suggests that the public view, fuelled by media sensationalism, may not be an accurate portrayal of social media platforms. It is important to recognise that social media use can also be beneficial – something which can often be overshadowed by discussion of the potential risks (Pujazon-Zazik & Park, 2010). Previous research has accredited social media with strengthening offline relationships (Ellison, Steinfield, & Lampe, 2007; Steinfield, Ellison, & Lampe, 2008), providing valuable information and support (Subrahmanyam & Greenfield, 2008), improving self-esteem (Valkenburg, Peter, & Schouten, 2006), aiding self-actualization and identity formation (Livingstone, 2008), and relieving loneliness (Deters & Mehl, 2012). In their survey of young internet users in Europe, Livingstone, Haddon, Gorzigm, and Olafsson (2011) found that only 12% of users reported being upset from something that happened when they were online - suggesting that social media use is regarded as a positive experience by the majority of users.

It is important to recognise that risk is socially constructed (Adam, Beck, & Loon, 2000) and thus what is defined as risky by one person may not be defined as risky by another. For example, Livingstone and Helsper (2007a) describe how young users may regard social media as a way to make new friends, a behaviour that in itself would usually be regarded as positive, and clearly the users themselves see this behaviour as beneficial. However, this same behaviour is a major source of worry for many parents with children who use social media in this way – and it is often reported in the media linked to 'stranger danger'. Therefore the same behaviour is regarded as a beneficial opportunity by the child but as a risk by the parent. Likewise, seeking information and advice online may sound like a beneficial behaviour however this may be regarded as risky if the advice concerns ED, SH or suicide (Livingstone et al., 2011; Whitlock, Lader, & Conterio, 2007). Therefore

the majority of researchers tend to agree that the internet has the potential to offer users both beneficial and risky opportunities (Baumgartner et al., 2010b; Livingstone, 2008). However Livingstone and Helsper (2007) identify that there is a lack of consensus over the degree to which the internet does, or does not, increase overall likelihood of encountering risk. They attribute this to previous researchers attempting to measure *overall* risk therefore failing to recognise that internet 'uses' and internet 'users' are distinct. It is necessary to make this distinction as different users will seek different functionalities of the internet and this, alongside interaction with their social context, will influence the nature of the opportunities that are accessible to them (Amichai-Hamburger, Wainapel, & Fox, 2002; LaRose, Mastro, & Eastin, 2001).

With this in mind it becomes clear that addressing online risk it is not as straightforward as identifying and labelling particular behaviours as risky (Livingstone & Helsper, 2007). It is the interaction between context and behaviour that creates the risk, therefore for one individual the risks of a behaviour may not outweigh the benefits, but for another the opposite may be true depending upon the individual involved and the context in which that behaviour takes place. Although age and gender differences are investigated within this research, it is not expected that identifying 'at-risk' groups will be as straightforward as identifying a particular age range or gender. There is a need to appreciate that engaging in online (and offline) risk behaviour is likely to be influenced by a complex interaction between individual differences and social context. Some of the additional factors that have been linked to risk behaviour include risk propensity (Meertens & Lion, 2008) and peer influence (Baumgartner et al., 2010a; Gardner & Steinberg, 2005), therefore these factors will also be addressed in the following studies.

1.5. Overview of study one

The first half of this thesis comprises three phases of study. Each of the phases is based upon data gathered from a comprehensive online survey of over 1200 social media users. Together the studies aimed to identify: the most intensive users of social media and psychological factors that influence usage (phase 1), psychological factors which predict willingness to engage in online risk (phase 2), and evidence of a link between social media content and users' offline risk behaviour (phase 3).

Phase one investigates who is using social media and their reasons for doing so. This phase aims to identify age and gender differences in intensity of social media use and motivations for use. In addition the phase tests a predictive model for intensity of usage which includes the following predictors: social norms, experienced outcomes, computer literacy, perceived control over negative outcomes, and perceived positivity of social

media content. The model predicts that these factors will mediate intensity of usage through their effect upon users' cost-benefit analysis, i.e., perceived risk versus perceived benefit.

Having identified the most intensive users of social media use, the factors that influence usage, and any age and gender differences, phase two moves on to investigate what factors influence users willingness to engage in online risk behaviour. Phase two evaluates the suitability of the Prototype Willingness Model (PWM: Gerrard et al., 2008) for explaining willingness to engage in online risk. This model suggests that attitudes towards risk, social norms, past behaviour and positive perceptions of risk takers will predict willingness to engage in online risky behaviour.

Phase three takes the analysis one step further and investigates whether there appears to be a link between content viewed on social media and offline risk behaviour. This includes identifying whether there are any age and gender differences in the strength of this relationship, for example whether younger users appear to be more influenced by the online content that they see. Previous research suggests that males make more social media references to risk behaviours such as substance and alcohol use, compared to females (Moreno, Briner, Williams, Walker, & Christakis, 2009), therefore this phase of study looks at whether there is any evidence of gender differences in the relationship between social media use and risk behaviour.

Together the three phases provide a novel look at online behaviour and the psychological mechanisms underpinning online risk. A quantitative approach is applied to provide an overview of the phenomenon under investigation and to enable the testing of theoretical models. This provides the basis for the second half of the thesis, which will compliment this research by applying a mixed-methods approach to social media data and incorporating more in-depth qualitative analysis of online communication around risk behaviour.

The survey design and recruitment methods are discussed in more detail in Chapter 2.

2. Using an online survey to investigate social media and associated risky behaviour: Methodology of study one

Note: The study methodology has been published as a book chapter (refer to Appendix F).

As outlined in the previous chapter (section 1.5), study one uses survey data collected from social media users. Participation was restricted to users over 13 years of age, as this is the minimum age required to legally join many social media platforms (and included in the site's terms and conditions when the user profile is first created). To enable accurate data coding and analysis, data collection was restricted to participants who were fluent English speakers. Social media users were defined as someone who had used social media at least once in the last 3-month period (at the time of data collection). Given the target population, an online survey was deemed the most appropriate method for data collection (copy of survey in Appendix A). This method also had the benefit of being relatively low cost compared to postal or telephone surveys and allowed the researcher to reach a wide audience of participants internationally.

2.1. Sampling and recruitment techniques

It is possible that social media users on one platform, e.g., Twitter, may differ from users on another platform, e.g., Facebook. Therefore in order to limit biasing the sample, the study was advertised across a wide range of different online platforms including:

1. Websites and forums: e.g., GradCafe, Social Research Forum, The StudentRoom.
2. Dedicated participation sites: e.g., Social Psychology Network, Online Psychology Research.
3. Social media including Facebook, Twitter, Instagram and LinkedIn (including LinkedIn research interest groups, e.g., PhD survey support, Psychology students, PhD students, Academia PhD network)
4. Mailing lists: e.g., Association of Internet Researchers mailing list and Psychology Postgraduate Affairs Group mailing list.
5. University student participation pool: A university provided website that allows postgraduates to advertise their studies to undergraduate students, who can participate to gain credits necessary to pass to the next stage of their degree.

All adverts were cost-free; no paid adverts were used. A bit.ly link (www.bit.ly) was used to track which advert locations were receiving the most 'clicks' or 'visits' from potential

participants. This revealed that the three most effective sites (in terms of the number of people clicking the link to the survey) were Facebook, LinkedIn and Twitter.

The survey was completed anonymously. Participants were required to enter a personalised code at the start of the survey, which they could provide to the researcher if they wished to withdraw their data following participation (the code would allow the researcher to identify which of the anonymised survey responses belonged to that participant).

Non-completion can introduce bias into the sample. Therefore as the survey was lengthy and time consuming (taking approx. 30 minutes), participants were offered a small incentive to encourage them to complete the survey and to thank them for their time. All participants who completed the study were eligible to be entered into a prize draw to win a £50 Amazon voucher. This value was considered reasonable and appropriate for the participation involved, and not large enough as to act as a form of coercion. The incentive was well received by the participants and also convenient for the researcher as the e-voucher could be conveniently emailed to the winner – saving time and delivery costs and not requiring participants' personal details (e.g., postal address). As the survey was completed anonymously, participants were redirected to a separate site at the end of the survey to enter their email address for the prize draw. This information was not linked to their survey response.

In addition to the incentive, a novel technique was used to help maintain participants' interest throughout the survey; Random, interesting and humourous facts were added throughout the pages. This proved to be a popular technique and participants provided feedback to say that they had really enjoyed this feature. One participant recommended the study to her Facebook friends quoting the random fact shown in Figure 2.1 and stating saying that she "loved it [the study] and thought it was fun". Therefore participants seemed more likely to recommend the study to their friends as a result of this technique.

Figure 2.1. One of the random facts used throughout the survey to maintain participants' interest.

To help roll the survey out to as many potential participants as possible, snowball sampling was used. Snowball sampling refers to recruiting participants by asking existing participants to recommend the study to their acquaintances, i.e., friends, family and colleagues (the numbers grow in size like a rolling snowball hence the term snowball sampling). This technique helped the sample to grow further each time participants rolled out the information to their social network. Snowball sampling is particularly effective when used via social media as these platforms enable users to easily and conveniently share the study with everyone in their social circle, e.g., by 'sharing' on Facebook or 'retweeting' on Twitter. A few retweets can rapidly increase the survey audience by hundreds, or even thousands of people. For example, if just one person retweets the link to only 100 'followers' (i.e., their social connections on Twitter), and then just 10% of those people retweet to another 100 followers, that is an additional 1100 potential respondents in just two quick steps. To make sharing even easier for participants, clickable links were provided at the end of the survey that would automatically share the survey on the participant's Facebook and/or Twitter pages. Participants were also provided with a website address that they could copy and paste onto other media platforms.

The target population for the survey included minors (13-15 years). One of the main challenges faced in recruiting respondents from this age group was the requirement to obtain opt-in parental consent prior to collecting data (requirement stipulated by the institutional ethics approval for this study). Therefore it was necessary to recruit minors via their parents. This was achieved by contacting schools to ask if they were interested in participating. Paper information sheets were then dispatched to those schools that consented to take part; the staff then distributed these sheets to the pupils' parents. Rather than relying upon the parents returning traditional paper consent forms, the researcher designed an online alternative. The information sheets initially distributed to the parents included the website address for the online consent form. The form asked parents to input their name and their child's name, and to sign to indicate their consent for their child to take part in the study. In order to obtain an actual signature from the parents, the researcher designed a form that incorporated a signature box feature to allow parents to sign using their mouse (or finger if using a smartphone or tablet). This was implemented by using Formstack (www.formstack.com) - a paid service that costs approximately £7 per month on a pay as you go basis.

Using an online consent form greatly reduced the involvement of the school, both in terms of staff time and class disruption. Reducing the schools' involvement increased the attractiveness of participating in the study and resulted in the schools being more willing to agree to take part. Eight schools were recruited for the study. Using the online consent forms also saved time for the researcher, as receipt of the electronic forms was

instantaneous. This method also ruled out any forms accidently being misplaced during the journey from parent to school and then school to the research team. Once parents had completed the online consent form they were informed to pass on the information sheet and survey website address to their child to enable them to access the survey. The children were still required to provide their own consent prior to taking part by ticking a consent box on the first page of the survey.

2.2. Sample demographics

Data was collected over a four-month recruitment period from a total of 1228 respondents. Participants who did not proceed past the first page of the survey (the demographic questions) were excluded, leaving a final sample size of 1102 participants. The demographics of this sample are shown in Table 2.1.

Table 2.1. Demographics of sample of social media users for Studies 1 – 3 (*n* = 1102).

		n	% of sample
Age	13 – 17 years	128	11.6
	18 – 25 years	407	36.9
	26 – 39 years	360	32.7
	40 – 49 years	102	9.3
	50 – 80 years	80	7.3
	Missing	25	2.3
Gender	Male	334	30.3
	Female	768	69.7
Country	United Kingdom & Ireland	573	52
	United States of America	241	21.9
	Canada	60	5.4
	Germany	23	2.1
	Australia	19	1.7
	India	17	1.5
	China	12	1.1
	Other (59 countries, each <1% of sample)	157	14.3

Online recruitment enables researchers to recruit an international sample with relative ease compared to traditional methods. Data was collected from 61 different countries. Although the UK, USA and Canada make up the majority of the sample this is likely to be a

reflection of the websites where the study was advertised and the English language criterion.

The sample included more females than males. Whilst research suggests that this is representative of social media users (Kimbrough, et al., 2013), recent findings also suggest that this gender difference is diminishing (refer to Chapter 3, pg. 30). Therefore, it is also possible that the greater amount of female participants could be – at least partially – due to a gender difference in responding to questionnaires (e.g., Hill, Roberts, Ewings, & Gunnell, 1997). Although there were more females than males in the sample, males still accounted for more than 30% of the sample; therefore this gender difference was not considered problematic. To account for differences in sample size between the genders, all statistical comparisons were conducted by comparing the percentage/proportion of male and female users.

The age range of participants was between 13-80 years. However, the age demographic was weighted towards the lower age ranges with over 83% of the sample under 40 years of age. According to existing research by the Pew Internet and American Life Project (Duggan et al., 2015) this is reflective of social media users as a whole and was not considered problematic.

Participants reported using a wide range of social media applications (Table 2.2). Over 90% of the participants used Facebook. The patterns shown are largely representative of the popularity of the individual social media sites (Lenhart et al., 2010).

Table 2.2. Number and percentage of participants using each social media platform

Platform	No profile	Inactive profile (not accessed in last 3 months)	Active profile (accessed in last 3 months)	% of total sample with active profile
Facebook	49	39	1014	92
Twitter	258	138	706	64.1
YouTube	298	126	678	61.5
LinkedIn	583	129	390	35.4
Instagram	640	88	374	33.9
Google+	489	286	327	29.7
Tumblr	744	99	259	23.5
Pinterest	765	89	248	22.5
WordPress	836	114	152	13.8
Flickr	859	127	116	10.5
Blogger	862	141	99	9
Photobucket	823	182	97	8.8
FourSquare	986	56	60	5.4
Vimeo	995	61	46	4.2
LiveJournal	947	114	41	3.7
GoogleLat	1029	38	35	3.2
MySpace	705	366	31	2.8
Tagged	1040	48	14	1.3
Bebo	908	185	9	0.8
Other active profile	949	n/a	153	13.9

2.3. Final sample and groupings for phases 1-3:

To summarise, the overall final sample for study 1, for all phases, consists of 1102 participants; age 13-80 years (M = 28.51 years, SD = 11.26 years). Of the sample, 69.7% were female (n = 768) and 30.3% were male (n = 334).

Within this sample there were some surveys with incomplete data. This missing data was tested for randomness using Little's MCAR (Missing Completely At Random) test. Data needs to be shown to be missing at random in order for data imputation techniques to be applied without biasing the data. Little's MCAR test determines if there are any significant

patterns in the data which would mean using such techniques would introduce bias (Rubin, 1976). However, the results were non-significant indicating that the data was missing completely at random. Consequently, the missing data were addressed using Maximum Likelihood Estimation which has been shown to be a reliable method for dealing with missing data, and which is superior to the deletion of incomplete cases (Enders & Bandalos, 2001).

Age and gender differences are tested during all 3 phases of the study (see relevant chapters for further details). For phase one a mean split (<28.5yrs and >28.51yrs) is used to compare the low and high age groups for intensity of social media usage. This age also coincides closely with the age range used to define younger and older users in existing research (e.g., Duggan et al., 2015).
A deviation in age grouping was necessary for phase two, as this phase was designed to compare the suitability of a predictive model (the Prototype Willingness Model [PWM], Gerrard et al., 2008) across adolescents and adults. The PWM model was designed for, and has been previously applied specifically to, adolescents - therefore a mean/median split would not be appropriate for this phase of the study. To allow comparison of the models, participants were grouped into adolescent (13-19yrs) and adult (20yrs+) age groups.
For the final phase no age groupings were necessary as age was used as a continuous predictor in the analyses.

The following three chapters detail the three phases of study conducted using this data.

3. Study 1, phase 1: Who is using social media? Identifying and explaining age and gender differences in intensity of use

Researchers are identifying shifts in social media user demographics (Hampton et al., 2011; Madden & Zickuhr, 2011; "Royal Pingdom: Social network demographics," 2012). As identified in Chapter 1 (section 1.3), there has been considerable growth in the number of older adults who use social media. Age is not the only user demographic which appears to be changing. In it's early years, the internet was a male dominated environment, however this gender gap appears to have almost disappeared in recent years (Courtois et al., 2009; Weiser, 2000). The introduction of social media brought a further shift in gender differences, with more females using these platforms compared to males (Kimbrough et al., 2013). Recent research suggests that this gender gap may also be diminishing, with the difference in social media use between the genders no longer reaching significance (Perrin, 2015). However, it is important to note that some surveys include online forum use in their stats (excluded in accordance with the definition of social media used in this research, refer to section 1.2). Excluding the results for online forums, current findings still report significantly more females using many of the social media platforms (e.g., Duggan et al., 2014; Hargittai, 2007; Madden & Zickuhr, 2011).

However, despite studies identifying shifts in user demographics, there is a lack of research into the factors that explain why some people use social media more than others. It is important to understand not only who is using social media but also the factors that influence their *intensity* of use. There is a growing body of research into problematic internet use such as internet addiction (Karaiskos, Tzavellas, Balta, & Paparrigopoulos, 2010; Young, 1998), negative health behaviours (Linkletter et al., 2010; Whitlock, Eckenrode, & Silverman, 2006), and a lack of awareness regarding social media safety (Liu, Gummadi, Krishnamurthy, & Mislove, 2011; Livingstone et al., 2011). Without understanding who is using social media (and why) any interventions will be limited in their effectiveness. This phase of study therefore investigates age and gender differences in social media use and explores the psychological factors that may explain these differences.

A review of the current literature helps to identify potential mediators of age and gender differences in intensity of use. Firstly, age differences may be partially mediated by generational differences in technology access and usage. Younger users have grown up surrounded by technology and social media. This may result in increased literacy for using these platforms and stronger social norms, i.e., social expectancy that they will use social media because their peers use it. Virden, Trujillo, and Predeger (2014) conducted focus groups with young women about social media use in which one participant is quoted as

saying: “Um, well I guess, you’re born, you have an iPhone and a laptop pretty much, now it seems like” (p. 137). Their participants also reported feeling more comfortable with online communication and expressed some discomfort with face-to-face interactions. As a result social media use becomes an everyday occurrence and simply a way of life for many. In comparison, older users may use social media less due to less technical ‘know how’, and/or unfamiliarity with the technology proving daunting and a barrier to usage, and/or due to lower social norms resulting not only in less pressure to comply with those norms but also potentially less perceived benefit from using the technology (i.e., not many peers using social media so less people to interact with and/or less obvious social benefits). Feeling of unfamiliarity/lower user literacy may also increase perceptions of the risks associated with using social media, for example through feeling less competent in their ability to control negative consequences if they arise (e.g., blocking unwanted messages).

Social norms are also expected to play a role in explaining gender differences in social media use. Social connections and interaction are at the heart of social media (Courtois et al., 2009; Whitlock, Powers, & Eckenrode, 2006). Gender differences in usage have previously been attributed to females valuing the social elements of social media more than males, e.g., talking with friends, sharing photos of social events etc. (Barker, 2009; Pujazon-Zazik & Park, 2010; Weiser, 2000). For example, research suggests that females are more likely to use social media for relational purposes than males, i.e., to maintain existing friendships and engage in interpersonal communication with their peers (Hargittai, 2007; Lenhart et al., 2011). In contrast, males appear more likely to use social media to make new friends/connections, to serve a non-relational purpose (e.g., find a job), or for entertainment (Lenhart, Lewis, & Rainie, 2001). This integration of social media within existing friendships suggests that social norms will be stronger for females. This includes descriptive norms, i.e., the users perception of the degree to which their peers are using social media, and subjective norms, i.e., the degree to which the user believes that their peers think that he/she should use social media.

As female users appear to place more emphasis upon interpersonal communication, this also suggests that they may perceive more benefits to social media use. Female participants in Virden et al's (2014) study highlighted perceived benefits of social media use as the ability to enhance and maintain relationships through social media. Virden et al. also suggest that female users may receive positive feedback from the attention they receive through social media that may be linked to their self-esteem.

It is apparent that the mediators of age and gender differences may be related to users’ cost-benefit analysis of social media use, i.e., the factors all appear to have the potential to influence usage through their impact upon perceived benefit or risk. Therefore it is hypothesised that the extent to which users perceive the benefits to outweigh the risks (or

'costs') will at least partially explain age and gender differences in intensity of social media use. This is in keeping with cognitive decision-based models of behaviour, such as the Theory of Reasoned Action (TRA: Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (TPB: Ajzen, 1991). Assessment of perceived benefits and risks may also be influenced by other factors including users' previous experiences, i.e., whether outcomes of their previous social media use have been positive or negative, and the users' overall perceptions of social media as positive or negative (in this study this is measured by overall evaluation of content positivity). It is predicted that younger users and female users will experience more positive outcomes as a result of social media being used by a greater number of their peers and therefore playing a stronger role in their social interactions. It is also predicted that these user groups will perceive social media as more positive overall due to its emphasis upon social interaction and connections with friends.

In summary, it is predicted that younger users will use social media more intensely than older users, and female users will use social media more intensely than male users and that these age and gender differences will be explained by the following factors:

a. Social norms (descriptive and subjective)
b. Outcomes (positive vs. negative)
c. Content positivity

In addition it is predicted that the following factors will also explain age differences:

d. Computer literacy
e. Perceived control

It is predicted that all of the above variables (items a-e) will partially mediate usage through their effect upon perceived benefit-risk (e.g., stronger subjective and descriptive norms may result in higher perceived benefit for using social media, such as social inclusion). It is also predicted that computer literacy (item d) may mediate age differences in intensity of use through perceived control over negative consequences (item e) as well as through perceived benefit-risk.

As it has been suggested that social norms can have a direct effect upon behaviour (e.g., Aarts, Dijksterhuis, & Custers, 2003) a direct path is also included from subjective and descriptive norms to usage (in addition to the pathway through perceived benefit-risk). The predicted model is shown in Figure 3.1.

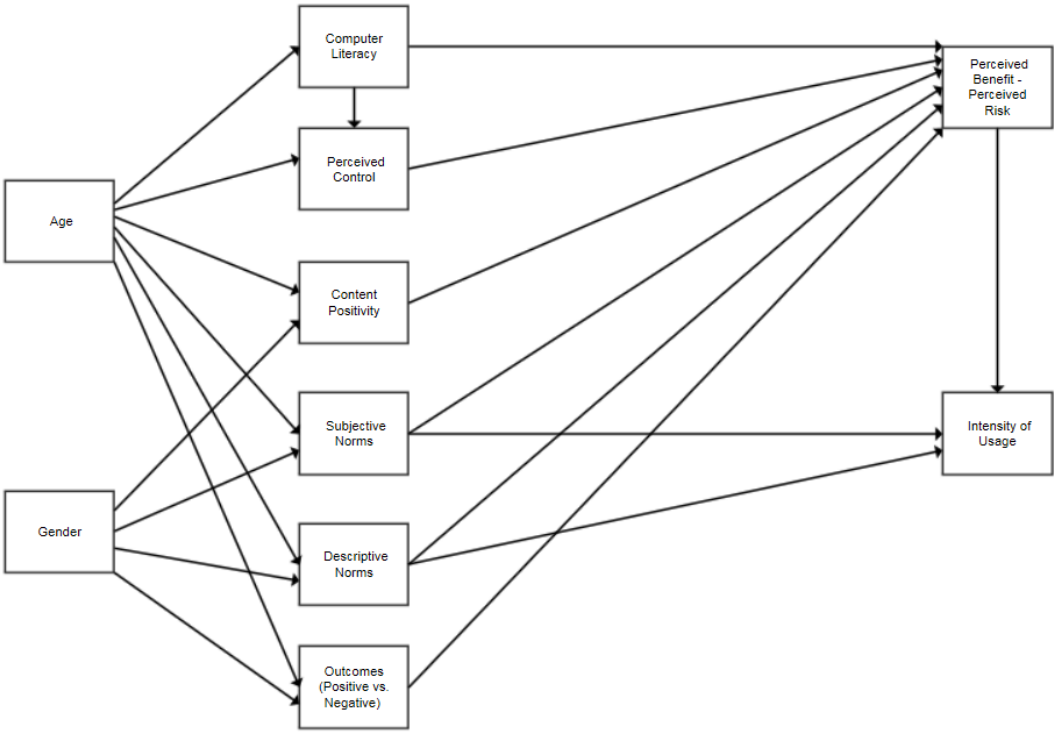

Figure 3.1. Hypothesised model of mediators of age and gender differences in intensity of social media usage.

Moderation analysis will also be conducted to see whether any of the variables differ in the strength through which they predict intensity of usage for the different user groups. Age is hypothesised to moderate the degree to which intensity of usage is predicted by *social norms (descriptive norms* and *subjective norms)* due to greater peer influence within the younger age group, e.g., more peers using social media, greater expectation from peers that they should use social media, and/or more importance placed upon peers attitudes and opinions (Virden, Trujillo, and Predeger, 2014). It is also hypothesised that *perceived benefit-perceived risk*, *perceived control*, and *outcomes (positive vs. negative)* will have a stronger effect on usage for older users due to this age group engaging in a more rationalised, cost-benefit analysis approach to their social media usage therefore placing more importance upon the degree to which social media is beneficial (Gerrard et al., 2008).

Gender is hypothesised to moderate the degree to which intensity of usage is predicted by *social norms (descriptive norms* and *subjective norms)* due to females placing more importance on interpersonal communication through social media (Barker, 2009; Pujazon-Zazik & Park, 2010; Weiser, 2000) and due to potentially more of their peer group using social media (Kimbrough, Guadagno, Muscanell, & Dill, 2013).

In addition to testing mediation and moderation effects, this research aims to investigate age and gender differences in motivation for use. Exploratory analysis will examine if there are age and gender differences in relation to the following:

1. Platform membership: i.e., whether there are differences in users' choice of social media platform (Facebook, Twitter, Instagram etc.).
2. Reasons for using social media: e.g., to connect with existing friends, to make new friends, to research businesses etc.
3. Frequency and types of activities engaged in: e.g., uploading photos, commenting on other user's updates, etc.

3.1. Measures and scoring

1. Social Media Usage Intensity Scale

Intensity of social media use was measured by modifying the Facebook Intensity Scale (FBI) by Ellison, Steinfield, & Lampe (2007); in order to create a scale suitable for *general* social media use. Modifications included rewording the questions to refer to social media and not specifically Facebook, e.g., *social media* is part of my everyday activity, and to include a measure of consistency of use (i.e., sporadic vs. consistent), i.e., 'there are weeks when I do not use social media at all'. A copy of this scale – termed the Social Media Intensity Scale (SMIS) - is included in Appendix B. The aim of using the SMIS reflects those of Ellison et al., i.e., to measure usage above and beyond simple measures of frequency and duration; this is achieved by incorporating how emotionally 'connected' the user feels to social media and the degree to which social media is integrated within their daily life. The SMIS was scored by summing together the 9 Likert-type items and calculating the mean. A reliability test revealed that the SMIS was highly reliable (9 items, $\alpha = .88$).

2. Perceived benefit-perceived risk (difference score)

This was measured by two items, one asking participants to rate how beneficial they feel social media is for them personally, and another asking how risky they feel social media is for them personally. These items were both scored on a 5-point Likert-type scale from 'not at all' (1) to 'extremely' (5). Risk was subtracted from benefit to create a benefit-risk difference score between -4 and 4, with negative values indicating that the user perceives social media as more risky than beneficial, and positive values indicating that they perceive social media as more beneficial than risky. A score of 0 indicates that the user perceives social media to be equally beneficial and risky (either due to feeling that no benefit/risk is involved or due to equal benefit and risk ratings).

3. Social Norms (subjective and descriptive)

Descriptive norms were measured using one item "Of the five people who you know best, how many use social media?" on a 6-point Likert-type scale from 'none' (0) to all of them (5). Subjective norms were measured using one item "People who are important to me think that I should use social media" on a 5-point Likert-type scale from 'strongly disagree' (1) to 'strongly agree' (5).

4. Outcomes (positive vs. negative)

Previous experiences of social media use were measured by asking participants to indicate if they had experienced any negative or positive consequences from two lists of 15-16 items (both including an 'other' option to capture any risks not specified). Two proportional scores were calculated for positive and negative outcomes by dividing the sum of experienced consequences by the total number of listed experiences. An overall positive vs. negative score was then calculated by subtracting the negative outcomes score from positive outcomes score. Therefore positive values indicate that overall the user has experienced more of the positive outcomes on the list and negative values indicate that the user has experienced more of the negative outcomes.

5. Content positivity

This was measured using a single item "In the last 3 months, has the content that you have seen on social media been generally positive or negative" measured on a continuous sliding scale from 0 (very negative) to 4 (very positive).

6. Perceived control

This was measured using a single item "I feel confident in my ability to deal with any negative experiences I may have whilst using Social Media" rated on a 5-point Likert-type scale from strongly disagree (1) to strongly agree (5).

7. Computer literacy

This was measured by scoring how many of the following social media related activities the participant could confidently do: block messages from someone they didn't want to hear from on a social networking website, change privacy settings on a social networking profile, hide their profile on social media, remove content from a social media profile e.g., delete photos or comments (4 items, $\alpha = .71$).

8. Reasons for use

This was measured by asking the participants to indicate which of the 25 listed reasons for social media use applied to their own usage, e.g., to make new friends, to stay in touch with

existing friends, to make appointments/reservations, to look for job vacancies, etc. (refer to Appendix A for the full item list).

9. Activities during use

This was measured by asking the participants to indicate how frequently they engaged in each of the 15 listed activities during their social media use, e.g., share an update such as updating their status or posting a tweet, comment on other users updates, tag friends in a photograph, etc. (refer to Appendix A for the full item list). Frequency was measured on a 4-point Likert-type scale from 'never' (0) to always (3).

3.2. Results

3.2.1. Are there age and gender differences in intensity of social media use?

A linear regression established that age could statistically significantly predict intensity of social media usage, b = -0.011, $F(1, 1100) = 25.30$, $p<.0001$. Age accounted for 2.2% of the explained variability in intensity of use. As shown by the negative coefficient and in Table 3.1 as predicted older users use social media less than younger users.

Gender was also found to be a significant predictor of usage. A simple linear regression established that gender could statistically significantly predict intensity of social media use, b = 0.299, $F(1, 1100) = 29.87$, $p<.001$. Gender accounted for 2.6% of the variability in intensity of use. Males were coded as 1, females coded as 2. Therefore as shown in Table 3.1 as predicted females use social media more intensely than males.

Table 3.1. Mean (and standard deviation) values and age/gender differences

	Age		Gender	
	<28.5yrs (n = 539)	≥28.51yrs (n = 563)	Males (n = 334)	Females (n = 768)
Usage	3.71 (0.81)	3.56 (0.87)	3.42 (0.87)	3.72 (0.82)
Benefit-Risk	1.08 (1.20)	1.12 (1.23)	.96** (1.15)	1.15** (1.26)
Subjective Norms	3.33 (0.99)	3.12 (1.02)	3.21† (0.98)	3.24† (1.03)
Descriptive Norms	4.56*** (0.84)	4.21*** (1.00)	4.24*** (1.08)	4.44*** (0.86)
Content Positivity	2.33* (0.75)	2.59* (0.69)	2.45 (0.70)	2.47 (0.73)
Computer Literacy	3.68*** (0.71)	3.57*** (0.91)	3.62 (0.86)	3.62 (0.81)
Outcomes	0.37 (0.20)	0.41 (0.21)	0.37 (0.21)	0.40 (0.20)
Perceived Control	4.07 (.79)	4.11 (.82)	4.17 (.71)	4.06 (.85)

Note: Significant age and gender differences indicated. *** $p<.001$, ** $p<.01$, * $p<.05$. † $p<.10$

3.2.2. What factors can explain age and gender differences in intensity of use?

3.2.2.1. Mediation analysis

Prior to the mediation analysis, the variables were checked for multicollinearity. Bivariate correlations between the variables are shown in Table 3.2. All variables are positively correlated with usage and benefit-risk difference. Regressing each of the predictors onto the other predictors revealed that all tolerance values were >.7 and all VIF values were <2 therefore providing no indication that multicollinearity was a cause for concern

Table 3.2. Bivariate correlations between the variables.

	Age	Gender	Usage	Benefit-Risk	Subjective Norms	Descriptive Norms	Positive vs. Negative Outcomes	Content Positivity	Control
Gender	-.081***								
Usage	-.146***	.171***							
Benefit-Risk	.010	.083***	.392***						
Subjective Norms	-.087***	.024	.326***	.142***					
Descriptive Norms	-.228***	.111***	.287***	.120***	.256***				
Positive vs. Negative Outcomes	.060***	.091***	.283***	.349***	.171***	.104***			
Content Positivity	.157***	.020	.068***	.160***	.06***	-.021	.161***		
Control	-.008	-.033*	.124***	.322***	.064***	.044	.234***	.114***	
Literacy	-.131***	.008	.182***	.162***	.05***	.148***	.109***	-.027*	.191***

Note: *** $p<.001$, ** $p<.01$, * $p<.05$.

Structural equation modelling (using Stata 13) was used to test the model shown in Figure 3.1. As hypothesised, age differences in intensity of use are mediated by the effects of age on descriptive and subjective norms and computer literacy (the latter partially through perceived control). As predicted, these mediators partially mediate intensity of use through their effect upon perceived benefit-risk (Figure 3.2).

However, the hypothesis that younger users use social media more intensely because they report more positive outcomes and have a more positive overall evaluation of social media content was not supported by the path analysis. The coefficients from age to outcomes (positive vs. negative) and content positivity were both significantly positive which indicates that older people *not* younger people report more positive outcomes than and had a more positive overall evaluation of social media content.

It is also worth noting that the direct effect of age on usage is still significant following inclusion of these mediators suggesting that other variables play a role in explaining age differences in usage.

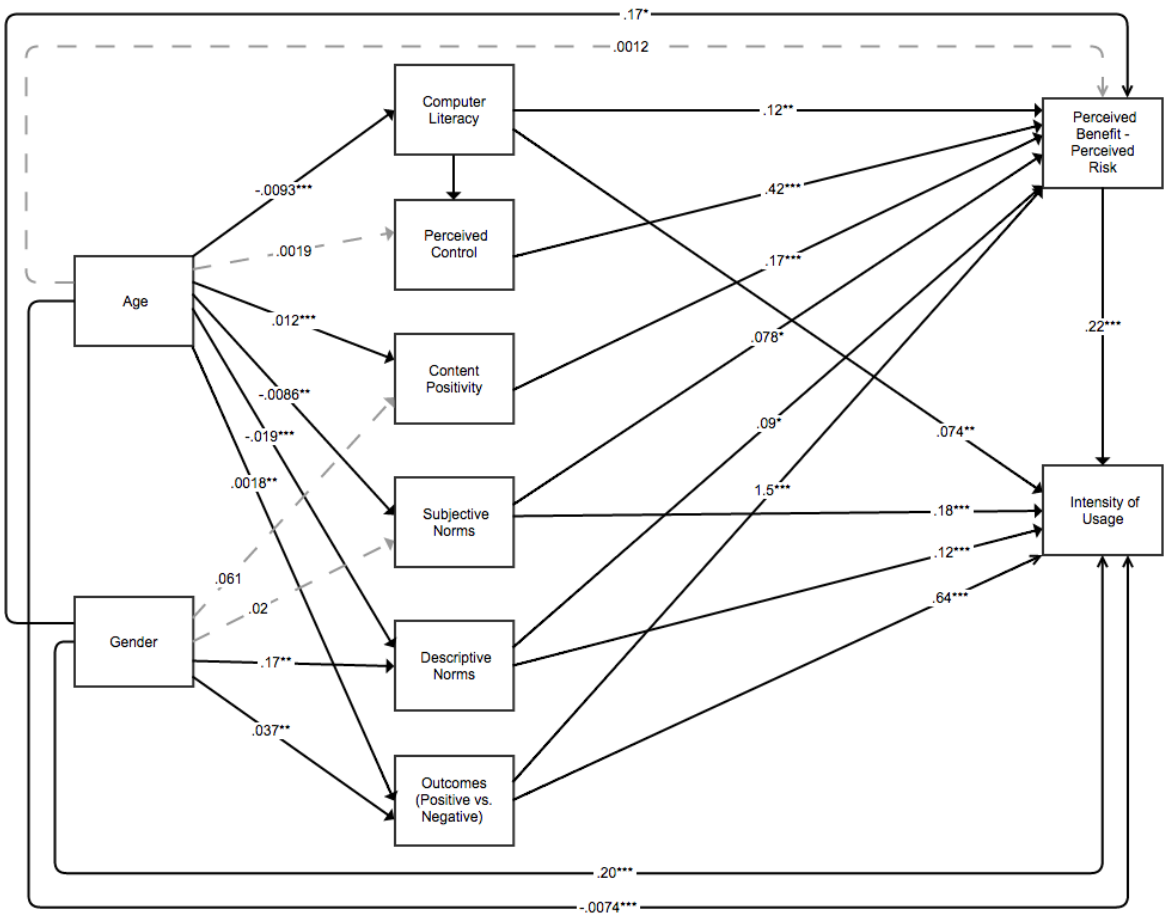

Figure 3.2. Structural Equation Modelling of hypothesised model. Non-significant paths are indicated with broken lines.

As predicted, the results show that gender differences are mediated by outcomes (positive vs. negative) and descriptive norms - both of which mediate intensity of usage partially

through their effect on perceived benefit-risk (the mediators also have an effect on usage outside of that explained through perceived benefit-risk). Subjective norms and content positivity were not significant mediators of gender differences in usage. The direct effect of gender on usage was still significant following inclusion of the identified mediators suggesting that other variables play a role in explaining gender differences. There is also a significant mediation for benefit-risk difference on gender differences in usage, outside of that explained by previous outcomes and descriptive norms.

3.2.2.2. Moderation analysis

Moderation analysis was conducted using the SPSS PROCESS macro developed by Hayes (2013). All variables were centred prior to running the moderation. As predicted and as shown by the significant interaction effects in Table 3.3, age moderated the relationship between intensity of usage and perceived benefit-risk, perceived control, and outcomes (positive vs. negative). However, age did not moderate the relationship between descriptive or subjective norms and intensity of use.

Table 3.3. Moderation analysis of age differences in intensity of social media use.

	b	*SE*	*p*
Benefit-Risk Difference	0.300	.020	<.001
Age	-0.012	.002	<.001
Interaction	0.006	.002	.0021
Positive vs. Negative Outcomes	1.420	.131	<.001
Age	-0.014	.002	<.001
Interaction	0.039	.012	.0011
Perceived Control	0.137	.034	.0001
Age	-0.011	.002	<.001
Interaction	0.009	.003	.0073
Descriptive Norms	0.227	.029	<.001
Age	-0.006	.002	.005
Interaction	0.003	.002	.262
Subjective Norms	0.262	.026	<.001
Age	-0.009	.002	<.001
Interaction	0.000	.002	.936

Note: Benefit-Risk: R^2 = .23, p<.001; Outcomes: R^2 = .15, p<.001; Control: R^2 = .05, p<.001; Descriptive Norms: R^2 = .09, p<.001; Subjective Norms: R^2 = .12, p<.001

Post hoc analysis shows that as predicted, the relationship between the predictor and intensity of usage is stronger for the older age group in all three cases (Figure 3.3).

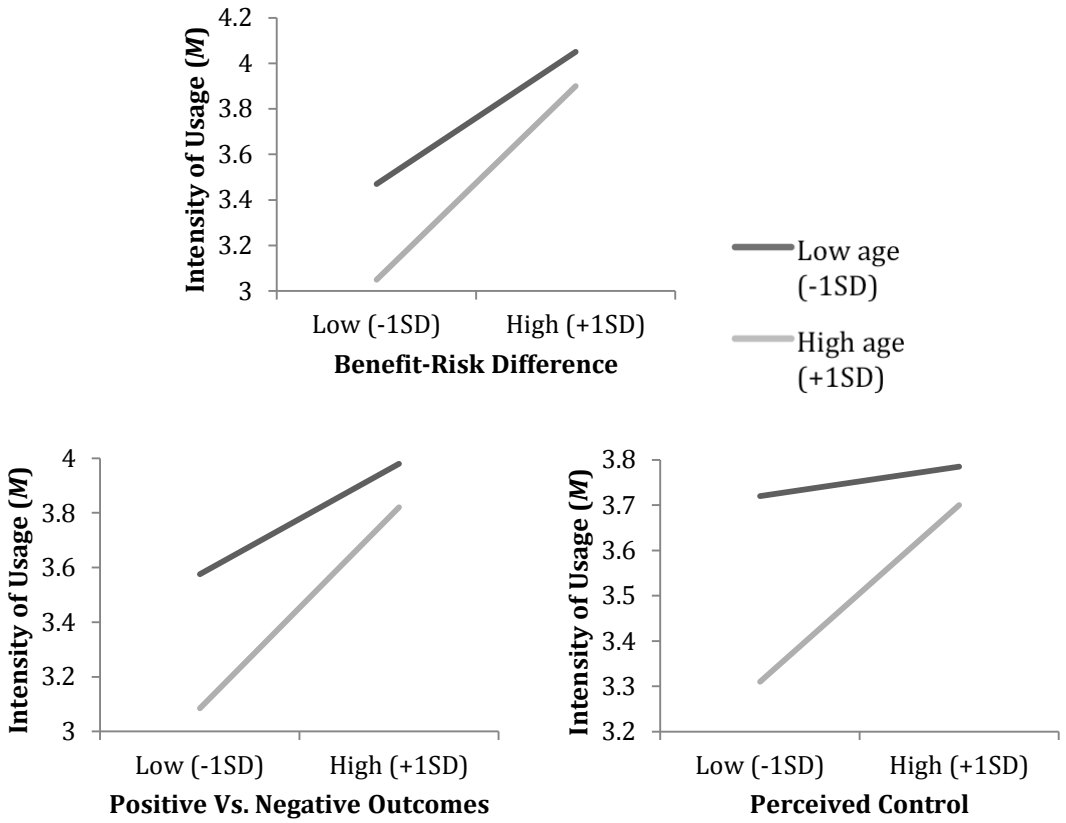

Figure 3.3. Moderation effects of age on the relationship between intensity of use and outcomes, perceived control and benefit-risk.

As positive experiences, perceived control and perceived benefits increase, intensity of usage also increases for all users. However these effects are stronger for older users than younger users.

The hypothesis that gender would moderate the degree to which intensity of use is predicted by descriptive/subjective norms was not supported. Social norms did not have a stronger effect for female users (Table 3.4).

Table 3.4. Moderation analysis of gender differences in intensity of social media use.

	b	*SE*	*p*
Descriptive Norms	.253	.030	<.001
Gender	.250	.054	<.001
Interaction	.026	.060	.666
Subjective Norms	.281	.024	<.001
Gender	.291	.053	<.001
Interaction	-.029	.063	.649

Note: Descriptive Norms: R^2 = .10, p<.001; Subjective Norms: R^2 = .14, p<.001

3.2.3. Are their age and gender differences in type of social media use?

Age and gender differences were identified in the types of social media platforms used, reasons for use, and type of activities engaged in whilst using social media:

Crosstabs analysis using a mean age split, shows that there is a significantly higher percentage of younger users using blogging platform Tumblr, video-sharing platform YouTube and photo sharing platform, Instagram. Whereas a greater percentage of older users are using professional work-based networking platform, LinkedIn (unsurprisingly given the nature of the website), blogging sites WordPress and Blogger, photo-sharing website Flickr, and location-sharing platform FourSquare (Table 3.5).

Table 3.5. Percentage of social media membership for younger (<28.5yrs) vs. older users (≥28.51yrs), and male vs. female users.

	Younger users (*n* = 539)	Older users (*n* = 563)	Male (*n* = 334)	Female (*n* = 768)
Facebook	92.8	91.3	89.5*	93.1*
LinkedIn	20.4***	49.7***	38.9	33.9
Google+	28.6	30.7	32.9	28.3
Twitter	64.6	63.6	62.9	64.6
Tumblr	32.8***	14.6***	20.7	24.7
WordPress	8***	19.4***	15.6	13
Blogger	5.2***	12.6***	9.3	8.9
YouTube	72.2***	51.3***	73.7***	56.3***
Flickr	6.3***	14.6***	15**	8.6**
Pinterest	21.3	23.6	12.3***	27***
Instagram	46.9***	21.5***	27.2**	36.8**
Photobucket	8	9.6	12.6**	7.2**
FourSquare	17**	43**	8.1**	4.3**
Other	12.6	15.1	15.6	13.2

Note: *** $p<.001$, ** $p<.01$, * $p<.05$. Excludes platforms which accounted for <5% of total users.

Between-gender comparisons reveal significantly higher percentages of females are using social media platform Facebook, Interest/website sharing platform Pinterest and photo sharing platform Instagram. Whereas a higher percentage of male users are using YouTube, photo sharing platforms Flickr and Photobucket and location sharing platform FourSquare.

3.2.4. Reasons for use

Participants were asked to indicate why they used social media. Chi-square analysis revealed significant age and gender differences: A higher proportion of younger users use social media to exchange work files or conduct research, read about celebrities, communicate with close/offline friends, research leisure activities (e.g., cinema times), research travel information (e.g., travel timetables, directions), find information on someone they have just met offline (or predict that they are likely to meet in the near future), make new friends, play games and share audio. In comparison, a greater proportion of older users use social media for career related reasons (e.g., to search for a job or engage in networking) and communicating with online only friends (Table 3.6).

Greater proportions of females use social media to find information about celebrities, keep in touch with close friends/family, share audio, and participate in charity work. Whereas, more males are using social media to find casual sexual encounters, make new friends, talk to online only friends and find romantic partners. Males are also more likely to use social media for career-related reasons, to find contact details for friends/acquaintances, to share a hobby with likeminded individuals, to engage in trolling, to share their own creative content, to research religion, and to view pornography (Table 3.6).

3.2.5. Activities during use

Participants were also asked to indicate how frequently they engage in specific activities when they access social media, e.g., how often they 'comment on other's updates' or 'tag someone in a photo'. This was analysed using independent samples t-tests (Table 3.7). The results show that during their social media use, younger users more frequently read updates from others, indicate that they like others' content (e.g., by hitting the 'like' button), share pre-existing content (e.g., reblog another users post), send private messages to other users, add or remove friends/connections and 'tag' others in content such as photos. Younger users also more frequently play social media based games (against the computer/alone), and remove content uploaded from others. Older users do not engage in any social media activities significantly more often than younger users.

During their social media use, females users more frequently share updates about themselves (e.g., update status, post a tweet), send more private messages to other users (sending public messages to others also nearer significance, $p = .059$), read and comment upon updates from others (i.e., statues/tweets etc.), indicate that they like others' content (e.g., by hitting the 'like' or 'favourite' button), and tag others in content such as photos. In comparison, the only result which was higher for males and nearing significance, was using social media to play games against, or with, other users ($p = .05$, Table 3.7).

Table 3.6. Chi-square results for age and gender differences in motivation for social media use (2 tailed, N = 1102). Younger users <28.5yrs, older users ≥28.51yrs.

	Younger users (%) (n = 539)	Older users (%) (n = 563)	Male (%) (n = 334)	Female (%) (n = 768)
Find contact information for friends/acquaintances	69.9	68.2	73.4*	67.2*
Share an interest/hobby with like-minded individuals	74	78.7	83.5***	73.3***
Make new friends	37.1*	30.7*	36.5	32.7
Find romantic partners	12.1	9.6	15**	9**
Find causal sexual encounters	6.3	6.2	12.3***	3.6***
Exchange files with colleagues/classmates or conduct research for work/education	78.8***	60.9***	71	69.1
Find information about celebrities	56***	35.3***	36.2***	49.5***
Find information on businesses, organisations or products	78.7	81.5	81.4	79.6
Make appointments, reservations or meetings	49.2	47.1	48.2	48
Keep in touch with what is happening in the world (e.g., news, weather, stocks/shares)	84.4	81.5	84.4	82.3
Career reasons – look for a job, advertise CV, network with other professionals	36.7***	54***	51.2*	43.1*
Share information/keep in touch with close friends and/or family	94.2*	90.9*	88.9**	94.1**
Share information/keep in touch with distant friends and/or family	93.5	93.6	92.8	93.9
Share information/keep in touch with online only friends	65.1**	74.4**	76**	67.2**

Note: *** p<.001, ** p<.01, * p<.05.

Table 3.6 continued on following page.

Table 3.6 continued from previous page.

	Younger users (%) (*n* = 539)	Older users (%) (*n* = 563)	Male (%) (*n* = 334)	Female (%) (*n* = 768)
Engage in trolling	6.1	5.5	12.9***	2.7***
Search for religious or spiritual information	12.8	10.1	14.4*	10.2*
Play games	39.7**	31.6**	34.1	36.2
Find info on leisure activities, e.g., movies, books, cinema screenings, gigs etc.	80.7**	74.1**	76.9	77.5
Find info on someone you have just met or think you may meet	78.5**	69.8**	27.8	25.1
Listen or share music/audio	83.5**	76.4**	16.5*	21.7*
View/share pornography	12.4	9.4	19.8***	7***
Find travel information, e.g., directions, maps, timetables etc.	58.1**	50.3**	52.7	54.7
Research family history	21.7	18.8	18.6	21
Get involved in/promote charity work	46	44.2	39.5*	47.5*
Share creative content you've produced (e.g., artwork, music etc.)	46.6	43.3	50.3*	42.6*

Note: *** $p<.001$, ** $p<.01$, * $p<.05$.

Table 3.7. Mean activity frequency scores for age and gender groups (scored 0-3 from never to always). Younger users <28.5yrs, older users ≥28.51yrs

	Younger users (n = 539)	Older users (n = 563)	Male (n = 334)	Female (n = 768)
Share an update about yourself (e.g., update status, post a tweet etc.)	1.43	1.34	1.31*	1.42*
Read updates from others (e.g., statuses, tweets etc.)	2.4***	2.15***	2.12***	2.34***
Comment on other's updates and/or their uploaded content (e.g., status, photographs etc.)	1.52	1.5	1.41**	1.56**
'Like', 'Favourite', 'Thumbs up' or 'Thank' others updates, posts and/or uploaded content	1.93***	1.76***	1.72**	1.89**
Upload original content created by yourself, e.g., photographs, art, videos, music, etc.	1.23	1.16	1.13	1.22
Share pre-existing content with others, i.e., content that you have not personally created	1.35*	1.26*	1.29	1.31
Send a 'closed' message to another user(s), i.e., a private message that only the recipient(s) can see	1.88***	1.5***	1.61*	1.72*
Send an 'open' message to another user(s), i.e., a public message that other users can see	1.27	1.23	1.19†	1.27†
Share current location	0.63	0.66	0.71	0.62
Play games with/against other social media users	0.53	0.48	0.57†	0.47†
Play games alone or against the computer	0.70**	0.55**	0.65	0.61
Create a connection to another user, e.g., send a friend request, 'follow' someone, 'subscribe' to someone's profile etc.	1.24***	1.08***	1.14	1.17
Delete friends or other connections, e.g., unfriend, unfollow or block someone	1.08**	0.96**	1.06	1
'Tag' someone in one of your updates or uploads, e.g., mention someone in a tweet/update or label someone as being in a photo or video you have uploaded	1.31***	0.98***	1.07*	1.17*
Remove content that other users have uploaded that mentions or features yourself, e.g., untag yourself from a photo	1.04***	0.86***	0.94	0.95

Note: *** p<.001, ** p<.01, * p<.05. † p<.10

3.3. Discussion

Phase one aimed to identify the most intensive users of social media, the factors that predict intensity of usage, and user motivations for using social media. Younger users and female users were found to use social media the most intensively. Investigating the factors underlying these age and gender differences offered partial support for the hypothesised model (shown in Figure 3.1) which predicted that social norms, experienced outcomes, computer literacy, perceived control over negative outcomes, and perceived positivity of social media content would be predictors of intensity of use through their effect upon users' cost-benefit analysis.

Age differences in usage were partially explained by younger users perceiving stronger descriptive and subjective social norms and reporting higher computer literacy (the latter affecting usage partially through perceived control over negative consequences). Recent research has suggested that there may be an *intra*-generational divide within this younger age group (Dorizas, 2009), particularly in relation to cross cultural and/or economic differences. Some researchers (e.g., Lichy & Kachour, 2014; Vaidhyanathan, 2008) suggest that caution is needed to prevent the automatic assumption that all members of this generation are equivalent in the nature and expertise in which they use social media and that whilst still using social media, not all younger users may be 'savvy' when it comes to the technology. However, this study suggests that younger users do score higher on computer literacy and that this does appear to mediate their intensity of social media use (alongside other non-competency related factors as previously discussed). However, it is recognised that this research - as with all online research - is likely to represent a subgroup of internet users (e.g., those that respond to online surveys or those who are more computer literate) and therefore further research is necessary to investigate whether these factors apply more broadly to all social media users.

Interestingly the predicted paths for content positivity and previous outcomes were found in the opposite direction to that predicted by the model, i.e., as age increases so do perceptions of content positivity and degree of positive outcomes experienced. Therefore older users are reporting more positive outcomes and higher perceptions of content positivity; however younger users are using social media more intensely. This suggests a competitive mediation (Zhao, Lynch, & Chen, 2010) also sometimes termed inconsistent mediation (MacKinnon, Fairchild, & Fritz, 2007), where there are two opposing mediational processes. This can occur when an effect is counterbalanced by other effects; for example although older user usage is partially explained by positive outcomes and

perception of positive content, younger users still use social media more due to other mediating factors.

Gender differences in usage were partially explained by females experiencing stronger descriptive norms and more positive outcomes. As predicted, these variables were also shown to mediate age and gender differences in usage partially through their effect upon perceived benefit vs. perceived risk. However, there was still a significant effect of benefit-risk on gender differences in social media use *outside* of that explained by social norms and past experiences, suggesting that other unidentified factors may influence gender differences in cost-benefit analysis.

Furthermore, direct age *and* gender effects existed even when accounting for the identified mediators, suggesting that other unidentified factors are also playing a role in differences in intensity of social media use (including factors outside of that explained by the benefit-risk trade-off).

The moderation analysis revealed that, as predicted, age moderated the relationship between intensity of social media use and positive experiences, perceived control and perceived benefits (benefit-risk difference). These factors had a stronger effect on usage for older users, i.e., intensity of usage increases for all users as positive experiences, perceived control and perceived benefits increase, however older users' usage increases more strongly. This suggests that older users intensity of use may be based upon a more rationalised reasoned decision process, e.g., older users may place more importance upon the degree to which social media use is beneficial (positive experiences, perceived benefits) and the degree to which risk can be controlled (perceived control). This was also reflected in the earlier mediation analysis that showed that older users' intensity of usage could be partially explained by positive experiences, and content positivity. Older users who have experienced negative experiences/content and perceive less control (therefore more risk than benefit) may be less likely to continue using social media. In comparison, younger users may continue to use social media for other reasons such as social norms, including the greater role of technology within their everyday lives and the social expectation that they will use social media.

Gender was not a significant moderator of the relationship between social norms and usage. Contrary to predictions, females do not appear to place more importance on social norms/peer opinion than males.

Analysis of the type of platforms used revealed that younger users are more likely to be using blogging platform Tumblr, video-sharing platform YouTube and photo sharing platform, Instagram. Whereas a greater percentage of older users are using professional networking platform LinkedIn, blogging sites WordPress and Blogger, photo-sharing

website Flickr, and location-sharing platform FourSquare. It is noted that the latter is an older platform which has largely been replaced by the integration of location-sharing services within other social media platforms, e.g., social networking websites. Therefore this age difference may simply reflect changes within the technology available.

It is not surprising the older users will be heavier users of LinkedIn given the nature of the website (professional, career-based networking). It is noted that blogging platforms WordPress and Blogger tend to feature more traditional blogging and broadcasting of original content. Social presence (i.e., the degree to which contact is achieved between users and the degree to which the users have social influence upon each other's behaviour) has been described as low for these blogging platforms (Kaplan & Haenlein, 2010). In comparison Tumblr is a micro-blogging platform with a much greater social element. Tumblr posts tend to consist of a single item (one image, video, etc.) or a small amount of text (Corkery, 2012). Tumblr implements a Twitter-like newsfeed in which users can follow other blogs, and be presented with a stream of real-time content from these users. Tumblr tends to show a stronger reblogging culture, based on the 'liking' and sharing of content. Whereas WordPress and Blogger tend to include more in-depth, and more original content. This suggests that older users may be engaging more with platforms which serve a specific purpose, e.g., sharing their opinion and their own original content/work (this can also be reflected in the use of Flickr which again is generally less social and aimed more at the hosting of photographs for inclusion on other platforms, such as blogs). Whereas younger users may be engaging with platforms which are more social in nature and which include a stronger degree of social feedback e.g., Tumblr, and Instagram (again based largely upon sharing single photos to gain 'likes' from other users). The greater use of YouTube for younger users may reflect greater sharing of video-based content on social networking platforms such as Facebook.

To return to gender differences, it was found that a higher percentage of females are using social media platform Facebook, image and bookmarking sharing platform Pinterest (which acts as an online 'inspiration pin board'), and photo sharing platform Instagram. Whereas a higher percentage of male users are using YouTube, photo sharing platforms Flickr and Photobucket and location sharing platform FourSquare. This suggests that, as predicted, females are using more social forms of social media; Facebook, Pinterest and Instagram all have high degrees of social interaction and social feedback including the commenting upon, liking and sharing of content. In comparison, the greater use of video and image hosting platforms (with generally lower social elements) suggests that males are using social media to share their content with less emphasis upon social feedback and communication. Alternatively this could indicate that they are seeking this social interaction through platforms not included within social media, e.g., Web 1.0 originated

internet forums and websites. All three of the content sharing platforms mentioned are widely used to host images that are then shared on online forums.

It is recognised that due to constant advances within social media design, it is becoming increasingly difficult to categorise platforms into distinct categories such as *social networking, blogging, photo-sharing, location sharing* etc. These functions are now being combined within many multifunctional applications. For example, in the current study it was found that male users report more intensive use of dedicated location sharing application FourSquare. However, there were no reported differences in the frequency of location sharing, suggesting that females are sharing their location through other platforms that have this function integrated within the broader platform (e.g., Facebook).

Analysing reasons for social media use and users online activities further suggests that younger users and female users are using social media for more social reasons. Both younger users and female users use social media for communicating with close friends and are more likely to engage in social activities such as sharing updates about themselves, reading others updates (e.g., Facebook statuses, tweets etc.), providing social feedback through liking others content (e.g., hitting the 'like', 'love', thanks', 'favourite' or 'thumbs up' buttons), and 'tagging' other users (e.g., in photographs). Females are more likely than males to comment on other users' content. Whilst younger users are more likely than older users to create (and delete) social connections and send private messages to others. These activities are all largely based upon *social enhancement*, i.e. enhancing or managing existing relationships. These results support previous research that shows that females (and as this phase of study suggests, younger users) use social media more for interpersonal communication with peers (Barker, 2009; Pujazon-Zazik & Park, 2010; Weiser, 2000). The emphasis upon social feedback also suggests that social media usage may be linked to self-esteem for females (and younger users), as suggested by Virden et al. (2014).

In comparison, older and male users use social media to communicate with online only friends, therefore suggesting that social elements of their use may be based more upon using social media for *social compensation*, i.e., to compensate for a lack of existing connections. Males are also more likely than females to use social media to find new romantic partners, opportunities for casual sex and to view pornography – again suggesting a link to social compensation.

To summarise, phase one suggests that younger users and female users still appear to be the heaviest users of social media. Age differences can be partially explained by social norms and computer literacy, and gender differences can be partially explained by descriptive norms and previous experiences of positive/negative consequences. These

factors partially mediate intensity of usage through their effects upon users' benefit versus risk perception. Age and gender differences in platform choice, reasons for social media use and online activities suggest that younger users and females users are more likely to use social media as a form of social enhancement (enhancing existing offline relationships); whereas older users and male users are more likely to use social media as a form of social compensation (creating new online connections) and/or for utilitarian reasons, i.e., as a means to an end rather than simply for social interaction. Future research should seek to identify other mediators and moderators of age and gender differences, potentially including less rational pathways based upon social context and attitudes towards stereotypes as proposed by dual process models of behaviour such as the Prototype Willingness Model (Gerrard et al., 2008).

4. Study 1, phase 2: Exploring attitudes towards online risk taking

Cognitive decision making models, such as the Theory of Reasoned Action (TRA: Fishbein & Ajzen, 1975) and its successor the Theory of Planned Behaviour (TPB: Ajzen, 1991) have been very successful at predicting health-*promoting* behaviours such as eating a healthy diet, cancer screening, giving up smoking and exercising (Armitage & Conner, 2001; Cho, Keller, & Cooper, 1999; Larabie, 2005; McCaul, et al., 1993). The TRA and TPB (Figure 4.1) propose that the most significant predictor of behaviour is an individual's intention to perform it. Intention is influenced by the individual's attitude towards the behaviour (i.e., whether they view the behaviour to be favourable) and social influences in the form of subjective norms. Subjective norms relate to the pressure that individuals perceive from believing that people who are important to them (e.g., their peers) want them to perform, or not perform, a behaviour (and their motivation to comply with the important others' views). Subjective norms can be measured using an item such as "most people who are important to me think that I should/should not exercise at least six times in the next two weeks" (Rivis, Sheeran, & Armitage, 2006, p. 484). Positive attitudes towards the behaviour and strong, positive subjective norms will increase an individual's intention to engage in the behaviour. The TPB expands upon the TRA by including perceived behavioural control (PBC) as another predictor of intention. PBC relates to the individuals beliefs about factors that may facilitate or impede their performance of the behaviour: i.e., how easy it would be for them to engage in the behaviour. For example this could be measured using the following item "Exercising at least six times in the next two weeks is entirely under/outside of my control" (Rivis, et al., 2006, p. 484). Intention will be greater if the individual perceives that they have greater control over the behaviour.

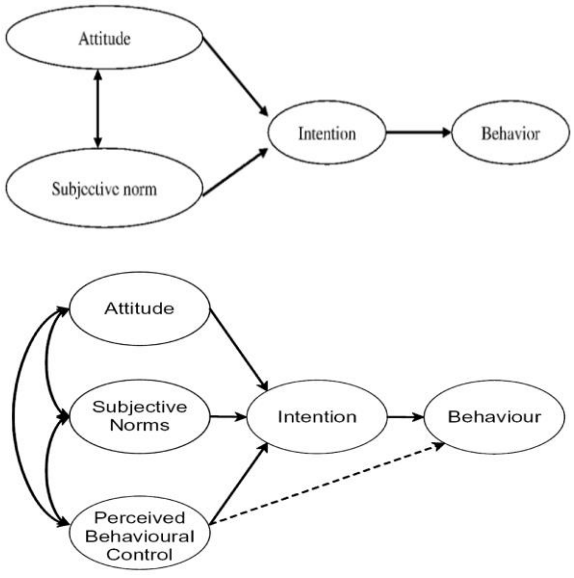

Figure 4.1. The Theory of Reasoned Action model (top). Source: Fishbein and Ajzen (1975) and The Theory of Planned Behaviour model (bottom). Source: Ajzen (1991).

It has been estimated that the TRA can account for 33-50% of variance in intention to engage in behaviour, with the addition of PBC explaining an additional 5-12% (Ajzen, 1991). However, despite their aforementioned success in predicting health-promoting behaviours, the models have occasionally fallen short when used to explain health-*risk* behaviours, e.g., excessive alcohol consumption (Webb & Sheeran, 2008) and risky sex (Albarracín, Johnson, Fishbein, & Muellerleile, 2001). The models often leave a large proportion of variance in intention to engage in health-risk behaviour unexplained (Gibbons, Gerrard, Blanton, & Russell, 1998), which suggests that there may be other predictive factors outside of those included by the model.

A possible explanation for this shortcoming is that the decision making process behind health-risk behaviours may differ from other behaviours (Cho et al., 1999). The TRA/TPB rely on the assumption that behaviour is planned and reasoned, i.e., the result of "a deliberative process that involves consideration of the behavioural options and anticipated outcomes" (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008, p. 33). However many risk behaviours often appear less reasoned and are instead defined as irrational in nature. Gerrard, et al. (2008) have criticised the models for failing to take into account the less rational, more reactive and social elements of risk behaviour.

In an attempt to improve upon these models, Gibbons and colleagues designed the Prototype Willingness Model (PWM). In addition to rationalised, planned *intention,* the PWM (Figure 4.2) also focuses upon *willingness* to engage in risky behaviour given a particular situation (Gerrard et al., 2008; Gibbons et al., 1998). The model is described as a dual-process model, i.e., it acknowledges that there are two different pathways to behaviour, the reasoned, analytic pathway and a more social, reactive pathway. The analytical pathway incorporates the TRA and allows for risk behaviours that may be the result of a reasoned decision (e.g., if the behaviour itself represents a 'goal state' for the individual) whilst the reactive pathway accounts for risk behaviour that is not intended. Gerrard, et al. suggest that the reactive pathway can lead to risk behaviour when the individual finds themselves in a situation that facilitates (but does not demand) risky behaviour, for example, being offered drugs at an unsupervised party, and that their behaviour is the result of willingness in that situation rather than reasoned intention. This non-intentional pathway has been supported by research by Gibbons, Gerrard, Reimer, and Pomery (2006) who measured intention to engage in unprotected sex and willingness to engage in unprotected sex in 18 year olds. One year later, they found that of those that had engaged in unprotected sex, one-quarter had indicated "definitely having no intention" to do so. Similarly, for drink driving, they found that 40% of those who had engaged in drink driving had indicated having no intention to do so one-year prior. When asked why

they had engaged in these unintended behaviours, one of the common responses was "it just happened" (pp. 39-40).

The non-intentional, reactive pathway to risk behaviour is thought to be largely influenced by social images or *prototypes*. Prototypes are images that the individual holds about people who engage in particular risk behaviours, e.g., the 'typical' smoker or drinker. The more favourable this image is, the more *willing* the individual will be to engage in that behaviour (prototype likeability). Willingness is also influenced by perceptions of similarity with the *prototype*, i.e., an individual will be more willing to engage in behaviour if they feel they are similar to the type of person who does that behaviour (prototype similarity). Gibbons et al. (2006) clarify that individuals are aware that by engaging in the behaviour they will also gain some of the negative characteristics that they attribute with the prototype and therefore these prototypes should not be regarded as aims or 'goals' (which is in contrast to intention which generally represents 'goal states'; Ajzen, 1991). Willingness is based upon an individual's overall heuristic evaluation of the prototype and their social situation. In addition to unprotected sex and drink driving, this social reaction path to risk behaviour has been demonstrated for numerous other behaviours including smoking and drinking (Blanton, Gibbons, Gerrard, Conger, & Smith, 1997; Davies, Martin, & Foxcroft, 2013) and tanning (Gibbons, Gerrard, Lane, Mahler, & Kulik, 2005).

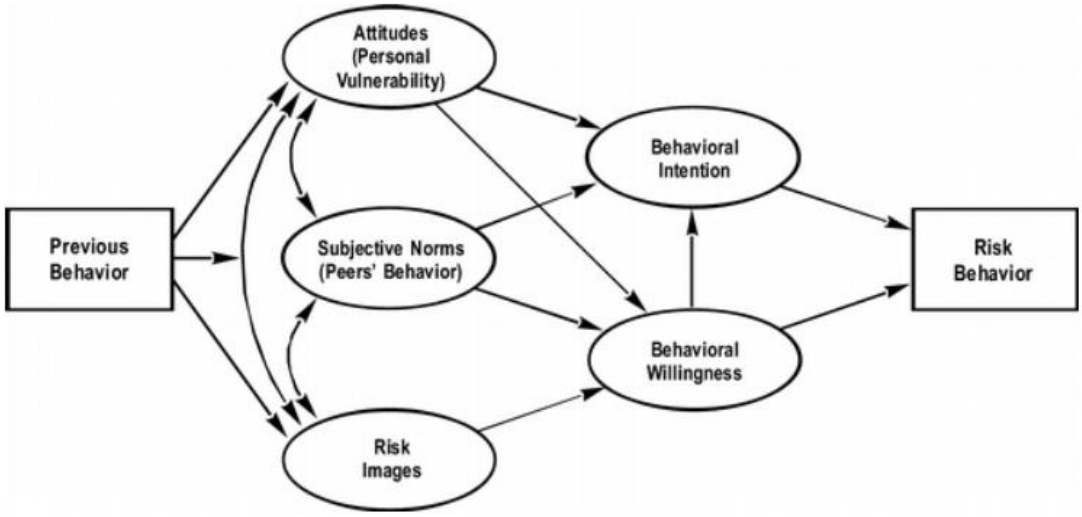

Figure 4.2. The Prototype Willingness Model (PWM). Source: Gerrard, et al. (2008)

Within the PWM, attitudes feed into both intention and willingness. Gerrard et al. (2008) propose that the link between attitudes and willingness is largely based upon perceived risk, i.e., the perception of the extent to which the individual feels *personally vulnerable* to the various risks associated with participating in the behaviour (p. 39). This is not a universal rating of how risky they feel a behaviour is, e.g., how risky it is to take drugs, but

how risky they feel the behaviour would be to them personally, e.g., how risky it would be if *they* were to take drugs. The less vulnerable an individual feels, the more willing he/she will be to engage in the behaviour.

In addition to subjective norms (as included in the TRA and TPB), the PWM also incorporates descriptive norms. Gibbons et al. (1998) argue that risk takers are unlikely to think that people who are important to them would specifically *want* them to engage in risky behaviour (subjective norms) and are more likely to be influenced by their peers' behaviour (descriptive norms). This is supported by previous research which has found descriptive norms increase the validity of the TRA/TPB (Rivis et al., 2006; Rivis & Sheeran, 2003). Moreno et al., (2009) investigated adolescents' MySpace profiles and found that 56% of the profiles contained references to alcohol consumption. They also identified that users tend to interpret peers online references to alcohol use as evidence of their actual use – suggesting that social media influences descriptive norms.

Although not included in the TRA, in a later critique of his model, Ajzen (1999) identified past behaviour as another predictor of intention. Gibbons et al. (1998) also identify that past behaviour influences willingness and it is therefore included within the PWM. It has been suggested that the informational value gained from experience feeds into an individual's attitudes and subjective norms, which in turn influences intention and willingness (Gerrard et al., 2008). It is also possible that previous behaviour can influence future behaviour independently of intention and willingness if the behaviour becomes habitual (Pomery, Gibbons, Reis-Bergan, & Gerrard, 2009).

Rivis et al. (2006) compared the predictive validity of the PWM above that explained by the TPB in explaining adolescents' health-protective (exercising, getting adequate sleep, eating breakfast) and health-risk (drinking alcohol, eating fatty food, smoking) intentions. They found that the PWM increased the explained variance by 6%, on average, above and beyond that explained by the TPB; concluding that the PWM was significantly better at predicting intention that the TPB for this behaviour/age group (Note: Rivis et al. measured intention as their dependent variable, however when testing the PWM it would have been more appropriate to include a measure of willingness).

It is worth noting that PWM was designed primarily to explain risk behaviour in adolescents, and existing studies have therefore shown a tendency to restrict its usage to this age range (or pre-adolescents e.g., Gerrard, Gibbons, Stock, Lune, & Cleveland, 2005). The PWM has been used to predict a range of adolescent risk behaviours including smoking (Gerrard et al., 2005; Hukkelberg & Dykstra, 2009), alcohol consumption (Spijkerman, van den Eijnden, Vitale, & Engels, 2004; Zimmermann & Sieverding, 2010), unsafe sex (Myklestad & Rise, 2007), and eating a high fat diet (Rivis et al., 2006). This

emphasis upon adolescents is due to existing research that suggests that decision-making shifts from a more reactive process to a more reasoned, analytical process with age (Gerrard et al., 2008). For example, Gerrard et al. and Pomery et al., (2009) both found evidence that willingness to engage in smoking is more strongly related to behaviour in young adolescents (age 13 years), but this shifts towards a greater emphasis upon intention from mid adolescence (age 16 years). During focus groups, Davies et al. (2013) found that younger adolescents tending to describe drinking due to circumstances whereas older adolescents *planned* to drink – again suggesting a shift to a more reactive pathway with age. This is also supported by the findings from phase one (Chapter 3) which found that the relationship between perceived benefit-risk (i.e., cost-benefit trade-off) and intensity of social media use is moderated by age, with older users' usage being more greatly influenced by the degree to which they feel the benefits outweigh the risks.

However, reactive decisions do not cease entirely in adulthood therefore Gibbons et al. (1998) and Gerrard et al. (2008) still believe that the model has some application in explaining adult behaviour in some contexts. Rivis, Abraham, and Snook (2011) investigated the validity of the PWM in explaining younger and older males' willingness to drive under the influence of alcohol. They found that the model explained 65% of variance in willingness in younger males and 47% of variance in willingness in older males, therefore suggesting that the model still has some value in relation to older age groups. Interestingly they also found that the predictive utility of prototype perceptions was actually stronger amongst the older participants. This suggests that prototypes may play a stronger role in some adult risk behaviour than first expected and suggests that future research should not be limited to applying the PWM solely to younger age groups. To investigate this further, this phase of study will expand upon the existing research by investigating the validity of the PWM across a wider range of age ranges from adolescent to older adult.

This research also aims to evaluate the predictive ability of the PWM in relation to risk taking in the online environment. Whereas previous research has shown that the model has validity for predicting willingness to engage in risk behaviour in the offline environment, there are fewer studies investigating its validity for online-specific risk behaviours. However social media provides a platform through which to receive social feedback on behaviour through seeing what behaviour others are exhibiting and how others react, therefore suggesting it can play an influential role upon behaviour (Beullens & Schepers, 2013). In one of the few existing studies, Litt and Stock (2011) investigated the effect of Facebook content on perceived social norms around alcohol consumption. Using experimenter-generated mock ups of Facebook profiles, they found that adolescents who viewed profiles portraying alcohol use as normative amongst older peers (i.e.,

profiles that portrayed 75% of older peers using alcohol) reported greater willingness to drink alcohol, more positive images of alcohol users and more positive attitudes towards alcohol use including lower perceived vulnerability (compared to adolescents who viewed profiles that did not portray alcohol use as normative, i.e., where only 25% of the profiles portrayed older peers using alcohol). This suggests that the PWM may have validity when applied in the online environment. Litt and Stock's study was the first to provide evidence that norms affect multiple-risk related cognitions and that this can take place through social media content, with younger adolescents looking to peers' social media profiles for indications of normative behaviour to emulate (Forsyth, Kennedy, & Malone, 2013; Litt & Stock, 2011). This is supported by recent research by Young and Jordan (2013) who identified that viewing sexually suggestive images on Facebook friends' profiles increases perceptions of unsafe sex and/or sex with strangers as the social norm and increases user's perceived likelihood that they will personally engage in unsafe sexual practices in the future. However, Litt and Stock's and Young and Jordan's findings were restricted to two behaviours (alcohol use and unsafe sex) and one social media platform (Facebook). Young and Jordan (2013) recommend that future studies expand upon the current knowledge by including a range of social media platforms, a range of behaviours and a broader participant group. This research will fill this gap in the literature by investigating the validity of the PWM in predicting willingness to engage in risk in four online-specific (but not platform-specific) behaviour scenarios: sharing embarrassing photos, publicly sharing current location, engaging in and sharing the videos of risky pranks and stunts, and engaging in sexual communication with strangers. These scenarios were chosen as they are reliant upon features that are at 'the heart' of social media, i.e., sharing content and communicating with other users, and they represent risk behaviours that have previously been identified on social media (e.g., Embarrassing photos: Garner & O'Sullivan, 2010; Risky pranks: GASP, 2013; Location sharing: Tsai, Kelley, Cranor, & Sadeh, 2010).

In summary, this phase of study addresses two research questions: Do the variables from the PWM (i.e., prototype similarity, prototype likeability and descriptive norms) enhance the prediction of willingness to engage in online risk, above and beyond that accounted for by the TRA (i.e., attitudes and subjective norms) and past behaviour? And how does the predictive ability of the PWM compare between adolescents and adults?

This research also uses a novel approach to measuring prototype similarity. Previous research has relied upon a single item measure explicitly asking participants to rate how similar they feel they are to the risk taker/prototype in a given scenario (e.g., Rivis et al., 2006). The current research aims to use a more objective measure of similarity by asking participants to rate the prototype's personality traits using the Ten Item Personality

Inventory (TIPI; Gosling, 2003). This is then compared with their own personality scores (also using the TIPI) to calculate a similarity score.

To the best of the researcher's knowledge, this research is one of the first to investigate the effectiveness of the PWM model in predicting what could be regarded as 'everyday' risk taking behaviour using social media, and the first to specifically use a more objective measure of prototype similarity, and to compare the effectiveness of the PWM in predicting younger and older users willingness to engage in online-specific risk behaviours.

4.1. Measures and scoring

Participants were presented with four different scenarios, each depicting one of the following behaviours:

1. Sharing embarrassing photos ('Kirsty and her friends find it funny to upload embarrassing photos of each other to Facebook. Although Kirsty is embarrassed by the photos posted of her, she just accepts it as a joke. Kirsty does not use her privacy settings so her Facebook profile is openly accessible to everyone, she does not change her settings to stop her friends posting these photos, nor does she delete the photos from her Facebook account');

2. Publicly sharing current location ('Alex loves to use social media to let his friends know where he is and what he is currently doing, for example he often openly shares the location of the coffee shop or bar that he is currently at, so that anyone who is nearby can join him for a drink');

3. Engaging in and sharing the videos of risky pranks and stunts ('Tom and his friends are playing a game known as 'Planking'. The aim is to try to lay straight, like a plank of wood, in the most original or difficult place. They aim to have the best, craziest and/or funniest photo, which they share openly through Social Media');

4. Engaging in sexual communication with strangers ('Rebecca 'met' Ian online when he sent her a friends request through Facebook. She accepted his request and they have been messaging each other and chatting online regularly. Rebecca really likes Ian and he has told her that the feeling is mutual, both have expressed an interest in dating and they plan to meet within the next fortnight. Rebecca and Ian have privately exchanged photos including some photos of a mild sexual nature').

Willingness to engage in the behaviour (DV) was measured by asking participants if they were in the same situation as the person in the scenario, how willing would they be to engage in the behaviour (e.g., If you were in the same scenario as Alex, how willing would you be to share your location openly through Social Media?). This was rated on a scale of 1 (very unwilling) to 5 (very willing). The following section details the questions used to measure each predictor variable:

1. Attitude towards behaviour (TRA & PWM)
   Attitude towards the behaviour was scored by calculating a perceived benefit-risk score. Participants were asked the following two questions: "If you did [behaviour featured in the scenario], how beneficial do you think it would be for you personally?" and "If you did [behaviour featured in the scenario], how risky do you think it would be for you personally?" E.g., "If you shared your location openly through Social Media, how beneficial do you think it would be for you personally?".
   These items were scored on a Likert-type scale from 1 (not at all beneficial/risky) to 5 (extremely beneficial/risky). Perceived benefit-risk score was then calculated by subtracting perceived risk from perceived benefit, therefore negative values represented an overall negative attitude towards the behaviour and positive values represent an overall positive attitude towards the behaviour.

2. Subjective norms (TRA & PWM)
   Subjective norms were measured by asking participants to rate the extent to which they agreed with the following statement: "People who are important to me think that I should take part in this type of behaviour". Participants responded using a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree).

3. Descriptive norms (PWM)
   Descriptive norms were measured using one item "As far as you are aware, have any of your friends ever [behaviour] on/through Social Media?". E.g., As far as your are aware, have any of your friends ever shared their current location openly through Social Media?
   Participant's responses were coded on a 0 – 3 scale depending on severity (this was rated on the same severity scale as users past behaviour, refer to item 4 for an example).

4. Past behaviour
   Past behaviour was measured using the item "Have you ever [behaviour] on/through Social Media? Participants' responses were rated on a 0 – 3 scale depending upon

severity, for example responses to the question 'Have you ever shared your current location through Social Media?', were scored as 0 if the user had never shared their current location through social media, scored as 1 if they had shared their location but only with friends who they also know offline, scored as 2 if they shared their location including with friends they only know online, and the highest score of 3 was given for those who publicly shared their location so that anyone could see it.

5. Prototype likeability (PWM)

   Favourability towards the prototype was measured using the item "Do you think [name of person in scenario] is a likeable person?" (E.g., 'Do you think Alex is a likeable person?'). This item was measured on a Likert-type scale from 1 (very unlikeable) to 5 (very likeable).

6. Prototype similarity (PWM)

   Similarity was scored by asking participants to rate the person in the scenario using the Ten Item Personality Inventory (TIPI; Gosling, 2003), e.g., 'Here are a number of personality traits that may or may not apply to Alex. You should rate the extent to which you think the pair of traits [e.g., extraverted, enthusiastic] applies to Alex, even if you think one characteristic applies more strongly than the other.'

   This provided a score for the big five personality traits: Extraversion (α = .64), Agreeableness (α = .34), Conscientiousness (α = .59), Emotional Stability/Neuroticism (α = .64), and Openness (α = .41). The difference between the participants' own scores on the TIPI and the scenario rated scores for each of the five personality traits were then summed to create an overall difference score. This was then deducted from 20 (the largest difference score possible) to reverse the scores into a similarity score, i.e., high scores represent high similarity and low scores represent low similarity.

   It is noted that the TIPI scales show low alpha values, however as explained by Gosling (2015):

   > It is almost impossible to get high alphas and good fit indices in instruments like the TIPI, which are designed to measure very broad domains with only two items per dimension and using items at both the positive and negative poles. For this reason some researchers have pointed out that alphas are misleading when calculated on scales with small numbers of items (Kline, 2000; Wood & Hampson, 2005).

   As noted in the original TIPI manuscript (Gosling et al., 2003), the goal of the TIPI was to create a short instrument that optimised validity (including content validity). The authors explain that the scale could have been designed to optimise alpha values, for

example by creating “Extraversion” scale from the items “Talkative, verbal” and “Untalkative, quiet” but this would have developed a scale measuring just one facet (talkativeness) of Extraversion. Therefore for a short measure where two items are measuring a broad construct, content validity is more important.

4.2. Results

Prior to running the regression analyses, descriptive stats were computed to confirm that there was adequate variance on the DV and predictors for both age groups. The results gave no cause for concern (Table 4.1). Checking for multicollinearity also revealed no cause for concern, all correlations between the predictors were less than .4.

Two-step hierarchical regressions (Table 4.2) were used to assess whether the additional factors introduced by the PWM contributed significantly to the predictive model above that of the TRA for two different age groups (adolescent 13-19 years, adult ≥20 years). The first step included past behaviour and the TRA variables: attitudes and subjective norms. The second step included the PWM variables: prototype similarity, prototype evaluation and descriptive norms.

As Gibbons et al. (1998) suggested that the strength of prototypes would be greatest when users perceive the prototype as similar *and* as favourable, the interaction between the two variables was also included in the second step (prototype similarity x prototype evaluation, Table 4.2).

Table 4.1. Means (and standard deviations) for the DV and predictors across all scenarios, split by age. Significant t-test results between the age groups (within each scenario) are indicated. Adolescents 13-19 years (*n* = 258), Adults ≥ 20 years (*n* = 844).

	Embarrassing photos		Sharing location		Videos of pranks		Sexual communication	
	Adolescents	Adults	Adolescents	Adults	Adolescents	Adults	Adolescents	Adults
Willingness (DV)	1.63 ***	1.37 ***	2.50	2.49	2.89***	2.46***	1.44*	1.57*
	(0.861)	(0.746)	(1.09)	(1.15)	(1.21)	(1.16)	(0.79)	(0.92)
Attitudes	-2.27**	-2.55**	2.28	2.24	-0.51***	-0.93***	-2.75*	-2.48*
	(1.37)	(1.47)	(0.91)	(0.99)	(1.32)	(1.42)	(1.45)	(1.59)
Subjective Norms	1.68***	1.44***	2.28	2.24	2.08***	1.77***	1.28	1.32
	(0.90)	(0.85)	(0.91)	(0.99)	(0.92)	(0.95)	(0.69)	(0.76)
Descriptive Norms	1.71***	1.44***	1.86	1.93	1.38***	0.80***	1.08	0.99
	(0.92)	(0.93)	(0.93)	(0.93)	(1.09)	(1.03)	(1.05)	(1.05)
Past Behaviour	1.22***	0.95***	0.95	0.94	0.45***	0.23***	0.59	0.56
	(0.80)	(0.80)	(0.87)	(0.92)	(0.73)	(0.54)	(0.80)	(0.84)
Prototype Similarity	15.00	15.01	3.02	3.28	15.30 [b]	15.63 [b]	15.22**	15.70**
	(2.38)	(2.58)	(2.24)	(2.15)	(2.25)	(2.40)	(2.22)	(2.42)
Prototype Likeability	3.13*	2.99*	3.62**	3.45**	3.39	3.33	2.86***	3.06***
	(0.83)	(0.78)	(0.82)	(0.82)	(0.82)	(0.77)	(0.80)	(0.69)

Note: *** $p<.001$, ** $p<.01$, * $p<.05$, [b] = borderline (<.06)

The TRA variables - and previous behaviour - were highly significant, positive predictors of willingness across the majority of the scenarios. This applied to both age groups. Overall the TRA accounted for between 27.4 – 53.3% of the variance (Table 4.2).

Introducing the PWM variables increased the overall variance explained by between 1.8 – 13.5%. With a median improvement of 4.15 - 4.9% and a mean improvement of 5.78%. The PWM increased the predictive ability of the TRA across all age groups and scenarios, however in all of the scenarios the biggest improvement in explained variance was for the adolescent age group.

Prototype likability emerged as the most consistent predictor, being significant across all age groups and scenarios. In comparison, prototype similarity was non-significant in three out of the four scenarios for both age groups, and the interaction between prototype likeability and similarity was only significant in two of the four scenarios for the adolescent group and only one of the scenarios for the adult group (Table 4.2).

Descriptive norms were only significant in two of the four scenarios for both age groups (adolescents: engaging in dangerous pranks and sharing location, adults: engaging in dangerous pranks and sharing sexual content).

Table 4.2. Unstandardised coefficients for the two-step regression analysis comparing the Theory of Reasoned Action (and past behaviour) with the Prototype Willingness model. Adolescents 13-19 years (n = 258), Adults ≥ 20 years (n = 844).

Entered variables	Scenario 1: Embarrassing photos				Scenario 2: Sharing location			
	Adolescents		Adults		Adolescents		Adults	
	Step 1 (TRA)	Step 2 (PWM)	Step 1 (TRA)	Step 2 (PWM)	Step 1 (TRA)	Step 2 (PWM)	Step 1 (TRA)	Step 2 (PWM)
Attitudes	0.156**	0.154**	0.227***	0.215***	0.253***	0.249***	0.264***	0.250***
Subjective Norms	0.148*	0.129	0.216***	0.168**	0.329***	0.314***	0.306***	0.269***
Past Behaviour	0.923***	0.948***	0.483***	0.457***	0.375***	0.290***	0.403***	0.415***
Prototype Similarity (centred)		0.020		0.029		-0.002		0.041**
Prototype Likeability (centred)		0.163*		0.190**		0.265***		0.141***
Prototype Similarity x Prototype Likeability (centred)		0.060*		0.034		-0.023		0.003
Descriptive Norms		-0.083		-0.059		0.113*		-0.048
R^2 (%)	45.1	48.9	40.5	43.7	47.9	52.8	53.3	55.1
R^2 change (%)		3.8		3.2		4.9		1.8

Note: *** p<.001, ** p<.01, * p<.05

Table 4.2 continued on following page.

Table 4.2 continued from previous page.

	Scenario 3: Sharing videos of pranks				Scenario 4: Sexual communication			
	Adolescents		Adults		Adolescents		Adults	
	Step 1 (TRA)	Step 2 (PWM)	Step 1 (TRA)	Step 2 (PWM)	Step 1 (TRA)	Step 2 (PWM)	Step 1 (TRA)	Step 2 (PWM)
Attitudes	0.280***	0.244***	0.268***	0.226***	0.083*	0.100**	0.188***	0.183***
Subjective Norms	0.303***	0.170*	0.308***	0.254***	0.155*	0.064	0.340***	0.295***
Past Behaviour	0.656***	0.287	0.476**	0.266	0.617***	0.623***	0.616***	0.532***
Prototype Similarity (centred)		0.038		0.025		0.078**		0.015
Prototype Likeability (centred)		0.521***		0.288***		0.205**		0.204***
Prototype Similarity x Prototype Likeability (centred)		0.024		-0.044*		0.048*		0.005
Descriptive Norms		0.297**		0.248***		-0.011		0.092*
R^2 (%)	29.3	42.8	27.4	35.1	25.1	32.3	46.4	49.3
R^2 change (%)		13.5		7.7		7.2		4.15

Note: *** p<.001, ** p<.01, * p<.05

4.3. Discussion

This phase of study aimed to investigate what factors influence users' willingness to engage in online risk behaviour and evaluate the suitability of the PWM for explaining willingness to engage in online risk. The results show that the PWM does increase the predictive ability of the TRA in explaining willingness to engage in online risk behaviour. This appears to be largely due to perceptions of prototype likeability, i.e., how favourably individuals judge others who engage in this behaviour. This research found a similar increase in predictive ability to that found by Rivis et al. (2006), however it differs in relation to the predictor which was found to be most consistent; Rivis et al. found prototype similarity to be the more reliable predictor (compared to prototype likability and the likeability x similarity interaction). It is possible that this is due to assessing the PWM in relation to different behaviours, or due to Rivis et al. using intention as their dependent variable rather than willingness. Testing the effect on willingness is more appropriate in relation to the PWM, and in the current findings likeability clearly emerges as the most persistent predictor.

This research also used a novel, potentially more objective measure of prototype similarity, which may account for the differences in the predictive ability of this factor. Future research should investigate the usefulness of prototype similarity as a predictor including investigating the validity of previous similarity measures to identify whether they have been potentially measuring a different, but related construct.

Comparing the predictive ability across the age groups revealed that the PWM does increase explained variance for both younger and older users. However, across all of the scenarios this improvement was greater for the adolescent group. Therefore the findings support Gerrard and colleague's (2008) hypothesis that the PWM will explain more variance in adolescents' willingness to engage in behaviour due to decision-making shifting to a more reasoned, analytical process with age. This further supports the results from phase one (Chapter 3) which found that the relationship between perceived benefit-perceived risk (i.e., cost-benefit trade-off) and intensity of social media use is moderated by age, with older users' usage being more greatly influenced by the degree to which they feel the benefits outweigh the risks. Despite showing that the model has the greatest validity for younger users, the findings still suggest that the PWM also has some value for use in adult populations (as predicted by Gerrard et al., 2008, and found by Rivis et al., 2011 in relation to driving under the influence).

Descriptive norms were a significant predictor of willingness for both age groups for scenario 3 (engaging in dangerous pranks and sharing the videos). This may suggest that

descriptive norms play a greater role for behaviours that involve more immediate risk, e.g., engaging in a dangerous prank has the potential for immediate (and severe) safety risks. In this particular scenario one of the photos depicted someone lying in the middle of the road, whilst the other photos depicted people balancing on top of tall objects. In comparison, the risk involved in the other three scenarios may not be so immediately apparent. Therefore it is possible that descriptive norms are more influential when considering willingness to engage in behaviours where risk is easier to identify, health-related, and/or of a more immediate or severe nature. This is another potential avenue for future research.

To summarise, phase two has demonstrated that the PWM does improve the predictive ability of the TRA in relation to willingness to engage in online risk behaviour. Although the model appears most effective at predicting adolescents' willingness to engage in risk, the findings also suggest that it may have some predictive value for older users. Prototype likeability appears to be the most consistent predictor in the model and the only one to reach significance across all scenarios and both age groups. The findings raise questions over the predictive ability of the other PWM factors (prototype similarity and descriptive norms) in relation to online risk behaviour. Future research should seek to investigate this further using a wider range of online behaviours and predictors. It has also been suggested that prototype images do not need to consist solely of images of the type of person engaging in the behaviour, but may also involve prototypes of risk-*avoiders*, i.e., the type of person who does *not* engage in the behaviour, for example the type of person who never drinks alcohol (Gerrard et al., 2008). Therefore future research may wish to include ratings of abstainer prototypes in addition to risk-taker prototypes.

5. Study 1, phase 3: Is social media 'encouraging' offline risk behaviour?

As discussed in Chapter 1, previous research has linked social media to *online* behaviour that is perceived to be 'risky' or to put the individual 'at risk'. These risks include, for example, revealing too much personal information (O'Keeffe & Clarke-Pearson, 2011), exchanging sexual content with strangers (Baumgartner et al., 2010a), and sharing content which could negatively impact upon the user's career (Pujazon-Zazik & Park, 2010). There are also concerns that social media use may exert its influence beyond the online world and influence risky *offline* behaviour for example, unprotected sex and sex with strangers (Young & Jordan, 2013), excessive alcohol consumption (Moreno et al., 2009), self-harm (Dunlop et al., 2011; Luxton et al., 2012; Whitlock, Powers, & Eckenrode, 2006), and eating disorders (Borzekowski, Schenk, Wilson, & Peebles, 2010a). The latest studies focus on the ubiquity of smart mobile technology, and the 'dysfunctional' aspect of what are near-constant connections and symptomatic of behavioural addiction (Kuss, Griffiths, Karila, & Billieux, 2014). However, despite existing concerns there is limited research demonstrating a link between social media content and offline behaviour. Existing research is limited and tends to focus upon individuals intention or willingness to engage in future behaviour rather than demonstrating a link to actual behaviour (Young & Jordan, 2013).

As demonstrated in the previous phase (Chapter 4), cognitive decision making models such as the Theory of Reasoned Action (TRA: Fishbein & Ajzen, 1975), Theory of Planned Behaviour (TPB: Ajzen, 1991) and Prototype Willingness Model (PWM: Gerrard et al., 2008; Gibbons et al., 1998) can help to explain how social media content may influence intention or willingness to engage in risk behaviour. Therefore suggesting that social media content has the potential to influence *offline* behaviour. However, existing research has been limited to using intention/willingness as a measure of future behaviour and researchers (e.g., Young & Jordan, 2013) have identified the need for research to measure behaviour itself. This phase of study addresses this gap in the literature by using a measure of behaviour and investigating whether there is a relationship between the type of risk material viewed on social media and congruent offline risk behaviour, for example whether users who are exposed to content portraying excessive drinking also tend to drink to excess. This research includes *all* current social media platforms, and a wide range of risk behaviours (excessive alcohol consumption, illegal drug use, ED, SH, violence, unprotected sex, sex with a stranger, engaging in dangerous pranks, bullying or directing hatred towards specific individuals or groups) and includes an international sample of participants from 13 years of age (the minimum legal age for joining most social media platforms) to 80 years.

In addition to investigating a link between content viewed and offline behaviour, this phase of study also investigates whether there are age and gender differences in the influence of online content. Media speculation and public concern suggests that younger users may be more prone to negative influences of the internet and social media ("Thinspiration' sites are fuelling teens' eating disorders", The Independent, 2014; "Self-harm sites and cyberbullying : the threat to children from web's dark side: Child safety groups warn of lost generation as fears grow over mental health of vulnerable teenagers," The Guardian, 2014); and previous research suggests that children and adolescents may be more susceptible to the effects of violence in the media (Browne & Hamilton-Giachritsis, 2005).

As shown in phase one (Chapter 3), there are gender differences in the type of activities that users engage in online, with females more likely to use social media to communicate with pre-existing friends whereas males are more likely to use it for information seeking, making new contacts and entertainment (see also Barker, 2009; Raine, 2003 cited in Pujazon-Zazik & Park, 2010). This suggests that there may be gender differences in the type of risk opportunities that arise from users' social media use. For example, females appear more prone to online sexual solicitation, harassment and cyberbullying (Livingstone & Helsper, 2007; Mitchell et al., 2008). This has been attributed to more females than males using the internet to communicate with others (Weiser, 2000) hence increasing their susceptibility to associated risks (Mitchell et al., 2008). However, as identified by Pujazon-Zazik and Park (2010) there is a lack of research into gender differences in social media use. More generally, research into media violence found that boys are more likely to show aggression after viewing violent media than girls (Browne & Hamilton-Giachritsis, 2005), again suggesting that gender differences may be present. Therefore age and gender differences will be investigated to identify whether there is any evidence that the link between social media content and offline risk behaviour is stronger for younger and/or male users.

As existing research suggests that risk taking propensity, i.e., an individual's tendency to take risks (Meertens & Lion, 2008), and peer behaviour (Andrews, Tildesley, Hops, & Li, 2002; Baumgartner et al., 2010a; Dal Cin et al., 2009) are likely to influence risk behaviour, these factors will be controlled for during the analysis, to identify whether online content predicts offline behaviour above and beyond individuals' risk propensity and the behaviour of their peers.

In summary, this research addresses the following two questions:

1. Does viewing risk content on social media predict engagement in congruent risk behaviours in the offline environment?

2. Is the relationship between online risk content and offline risk behaviour stronger for younger and/or male users?

It is acknowledged that demonstrating a link between content viewed and behaviour does not provide evidence for a causal link. However as there is very little empirical research in this area, this research represents a first step towards investigating whether a relationship does exist; therefore laying the foundations on which future research can build to identify the *nature* of that relationship.

5.1. Measures and scoring

Offline risk behaviour (DV), was measured by asking participants "In the last 12 months, how often have you done the following?". The behaviours included: Drinking alcohol to excess, illegal drug use, extreme dieting or disordered eating, SH, fighting or inflicting harm on others, unprotected sex, sex with a stranger, dangerous pranks, bullying or hatred towards specific individuals or groups (e.g., racism). Answers were scored on a Likert-type scale from 0 (never) to 4 (frequently).

The following variables were included as predictors (in addition to age and gender):

1. Online exposure
   Users' exposure to online risk content was measured by asking users to answer the following question in relation to the same list of risk behaviours used for the dependent variable: "Whilst using Social Media, how often do you come across material that encourages the following behaviours? This can include material that: is supportive of these behaviours, encourages and/or provides instruction on how to partake in these behaviours or simply portrays these behaviours in a positive light for example by portraying the behaviour as 'fun', 'enjoyable', 'cool', 'fashionable' etc.". Each risk behaviour was rated on a Likert-type scale from 0 (never?) to 4 (frequently).

2. Peers' risk behaviour
   Peers' risk behaviour was measured by asking participants the following question: "To the best of your knowledge, have any of your friends done any of the following things within the last 12 months?". Again, the list of behaviours was the same as used for the dependent variable (and online exposure). Answers were scored as 0 (none of my friends have done this), 1 (know of one friend who has done this) or 2 (know of more than one friend that has done this).

3. Risk propensity score

   Tendency to engage in risks was measured using Meertens and Lion's (2008) Risk Propensity Scale (RPS). The RPS is a 7-item measure. The first 6 items consist of asking participants to indicate their agreement with each of the following items on a scale of 1 (totally disagree) to 9 (totally agree): Safety first, I do not take risks with my health, I prefer to avoid risks, I take risks regularly, I really dislike not knowing what is going to happen, I usually view risks as a challenge. The final item asks participants to rate themselves on a scale of 1 (risk avoider) to 9 (risk seeker).

   Items 1, 2, 3 and 5 are reverse scored and then the items are summed to calculate an overall risk propensity score with a higher score indicating higher risk-seeking tendencies (7 items, a = .80).

5.2. Results

Two-step multiple regressions were used to test the predictors for each behaviour in turn. At the first step of the analysis the DV (offline behaviour), and the predictors online exposure, age, gender, risk propensity and peer behaviour were included in the model. Risk propensity and peer behaviour were included in order to control for these variables and identify whether content viewed online predicts offline behaviour above and beyond risk propensity and peer behaviour. At step two, interaction terms were added for age (age*online exposure) and gender (gender*online exposure). This identified whether age and/or gender moderate the relationship between online exposure to risk content and offline behaviour for each of the behaviours.

Initial tests for multicollinearity did not provide cause for concern (correlations <.5). All continuous predictor variables were centred prior to running the analysis due to the inclusion of interaction terms at step two. The results are shown in Table 5.1.

At step one (including online exposure, age, gender, risk propensity and peer behaviour), online exposure was a significant positive predictor of offline risk behaviour for 8 of the 9 behaviours (with bullying being the exception, Table 5.1). The model at step one accounts for between 12.5 – 31.2% of the variance (Adjusted R^2 = 12.1 – 30.9%) in offline risk behaviour.

The only significant main effect of age was for unsafe sex. Suggesting that for the majority of the behaviours, age does not directly influence risk behaviour. In order to identify if age moderates the relationship between content viewed online and risk behaviour, the interaction term (age*online exposure) was included in step 2 of the regression. No significant moderation effects were found (Table 5.1), therefore the strength of the

relationship between content viewed online and offline behaviour does not differ according to age, i.e., it is not weaker/stronger for older/younger users.

At step one, a significant main effect of gender was found for drug use, violence, unsafe sex, and sex with a stranger. A borderline significant result was also found for engaging in dangerous pranks. The results indicate that males are more likely to engage in these behaviours than females (irrespective of social media use, risk propensity or peer behaviour).

The addition of gender and online exposure interaction terms in step two of the regressions revealed significant interaction effects for seven of the nine behaviours (the exception being excessive alcohol consumption and unsafe sex), suggesting that gender moderates the relationship between content viewed online and offline behaviour for the majority of behaviours.

It is important to note that despite centring the variables multicollinearity was evident in the regression results for bullying behaviour. The introduction of the gender interaction term at step two, resulted in the previously non-significant main effect of online bullying content becoming significant. Inspecting the tolerance and VIF revealed multicollinearity for the main effect (Tolerance = 0.06, VIF = 16.35) and the interaction effect (Tolerance = 0.06, VIF = 16.04). However, multicollinearity was not a concern for all other variables in the analyses (Tolerance >.8, VIF <2).

Table 5.1. Two step regression analysis investigating age and gender differences in the relationship between online content and offline behaviour, controlling for risk propensity and peer behaviour (Gender coding: 1 = male, 2 = female).

Offline Behaviour (DV)	Step 1	*b*	*SE*	*p*	Step 2	*b*	*SE*	*p*
Drug use	Online exposure	0.192	.025	<.001	Online exposure	0.585	.086	<.001
	Age	0.001	.002	.583	Age	0.000	.002	.943
R^2 (R^2 adjusted):	Gender	-0.181	.051	<.001	Gender	-0.184	.051	<.001
Step 1 = .270 (.267)	RPS	0.012	.002	<.001	RPS	0.012	.002	<.001
Step 2 = .535 (.286)	Peer Behaviour	0.310	.032	<.001	Peer Behaviour	0.316	.031	<.001
Change = .265 (.019)					Online exposure x Age	-0.003	.002	.261
					Online exposure x Gender	-0.235	.049	<.001
Excessive alcohol consumption	Online exposure	0.205	.026	<.001	Online exposure	0.255	.089	.004
	Age	0.001	.003	.581	Age	0.000	.003	.953
R^2 (R^2 adjusted):	Gender	-0.063	.060	.290	Gender	-0.069	.060	.248
Step 1 = .312 (.309)	RPS	0.021	.002	<.001	RPS	0.021	.002	<.001
Step 2 = .549 (.313)	Peer Behaviour	0.481	.043	<.001	Peer Behaviour	0.484	.043	<.001
Change = . 237 (.004)					Online exposure x Age	-0.003	.002	.198
					Online exposure x Gender	-0.032	.049	.515
Disordered Eating/ED	Online exposure	0.098	.019	<.001	Online exposure	0.244	.076	.001
	Age	-0.001	.002	.439	Age	-0.002	.002	.256
R^2 (R^2 adjusted):	Gender	0.029	.041	.479	Gender	0.014	.042	.732
Step 1 = .179 (.175)	RPS	0.006	.002	<.001	RPS	0.006	.002	<.001
Step 2 = .427 (.182)	Peer Behaviour	0.358	.037	<.001	Peer Behaviour	0.351	.037	.<001
Change = .248 (.007)					Online exposure x Age	-0.002	.002	.402
					Online exposure x Gender	-0.085	.042	.043

Self-harm	Online exposure	0.261	.024	<.001	Online exposure	0.524	.088	<.001
	Age	-0.002	.002	.378	Age	-0.002	.002	.285
R^2 (R^2 adjusted):	Gender	-0.009	.042	.828	Gender	-0.018	.043	.664
Step 1 = .254 (.251)	RPS	0.005	.002	.005	RPS	0.005	.002	.004
Step 2 = .510 (.260)	Peer Behaviour	0.323	.038	<.001	Peer Behaviour	0.316	.038	<.001
Change = .256 (.009)					Online exposure x Age	-0.001	.003	.781
					Online exposure x Gender	-0.154	.051	.002
Violence	Online exposure	0.091	.015	<.001	Online exposure	0.309	.051	<.001
	Age	0.001	.001	.372	Age	0.001	.001	.521
R^2 (R^2 adjusted):	Gender	-0.062	.030	.037	Gender	-0.062	.030	.037
Step 1 = .125 (.121)	RPS	0.002	.001	.034	RPS	0.002	.001	.032
Step 2 = .375 (.141)	Peer Behaviour	0.159	.025	<.001	Peer Behaviour	0.146	.025	<.001
Change = .250 (.161)					Online exposure x Age	<0.001	.001	.973
					Online exposure x Gender	-0.128	.029	<.001
Unsafe Sex	Online exposure	0.166	.037	<.001	Online exposure	0.188	.125	.133
	Age	0.008	.003	.008	Age	0.009	.003	.004
R^2 (R^2 adjusted):	Gender	-0.200	.069	.004	Gender	-0.193	.070	.006
Step 1 = .206 (.203)	RPS	0.008	.003	.002	RPS	0.008	.003	.002
Step 2 = .208 (.203)	Peer Behaviour	0.552	.044	<.001	Peer Behaviour	0.555	.044	<.001
Change = .002 (0)					Online exposure x Age	0.005	.003	.176
					Online exposure x Gender	-0.006	.073	.933

Sex with a stranger	Online exposure	0.093	.019	<.001	Online exposure	0.268	.063	<.001
	Age	0.001	.002	.411	Age	0.001	.002	.420
R^2 (R^2 adjusted):	Gender	-0.107	.038	.005	Gender	-0.099	.038	.009
Step 1 = .143 (.139)	RPS	0.006	.001	<.001	RPS	0.005	.001	<.001
Step 2 = .388 (.151)	Peer Behaviour	0.195	.025	<.001	Peer Behaviour	0.195	.025	<.001
Change: .245 (.012)					Online exposure x Age	0.001	.002	.439
					Online exposure x Gender	-0.105	.037	.005
Pranks	Online exposure	0.047	.016	.003	Online exposure	0.255	.054	<.001
	Age	-0.001	.002	.697	Age	-0.002	.002	.323
R^2 (R^2 adjusted):	Gender	-0.064	.035	.065	Gender	-0.063	.035	.072
Step 1 = .285 (.282)	RPS	0.008	.001	<.001	RPS	0.008	.001	<.001
Step 2 = .545 (.297)	Peer Behaviour	0.419	.029	<.001	Peer Behaviour	0.406	.029	<.001
Change = .260 (.015)					Online exposure x Age	-0.002	.002	.158
					Online exposure x Gender	-0.126	.030	<.001
Bullied another individual	Online exposure	0.017	.012	.135	Online exposure	0.164	.043	<.001
	Age	0.000	.001	.873	Age	0.000	.001	.686
R^2 (R^2 adjusted):	Gender	-0.084	.026	.001	Gender	-0.086	.026	.001
Step 1 = .197 (.193)	RPS	0.002	.001	.048	RPS	0.002	.001	.039
Step 2 = .454 (.206)	Peer Behaviour	0.311	.023	<.001	Peer Behaviour	0.300	.024	<.001
Change: .257 (.013)					Online exposure x Age	-0.001	.001	.566
					Online exposure x Gender	-0.085	.024	<.001

Post hoc regressions of online exposure on offline behaviour were conducted separately for males and females (controlling for age, risk propensity and peer behaviour). Inspection of the regression slopes revealed that the relationship between online exposure and offline behaviour is stronger for male users for six of the behaviours (drug use, SH, violence, sex with a stranger, dangerous pranks and bullying), and with a borderline significance value for disordered eating/ED. The unstandardized regression slopes are reported in Table 5.2.

Table 5.2. Unstandardized regression slopes for gender moderation of online content (IV) on offline behaviour (DV).

	Male	Female
Drug Use	0.35***	0.13***
Excessive Alcohol Consumption	0.22	0.20
Disordered Eating	0.16 [b]	0.08 [b]
SH	0.37**	0.22**
Violence	0.18***	0.05***
Unsafe Sex	0.18	0.16
Sex with a Stranger	0.16***	0.05**
Dangerous Pranks	0.13***	0.01***
Bullying	0.08***	-0.01***

Note: *** p<.001, ** p<.01, * p<.05, [b] = borderline (p<.06)

With the exception of bullying, both genders show an increase in offline behaviour with increased exposure to online risk content, however males show a stronger increase than females.

Interestingly, the results for bullying reveal that the direction of the relationship between online exposure to bullying content and offline behaviour differs according to gender. For males as frequency of exposure to bullying content increases so does offline bullying behaviour. In contrast, females show the opposite relationship with offline bullying behaviour *decreasing* with higher levels of online content (Figure 5.1).

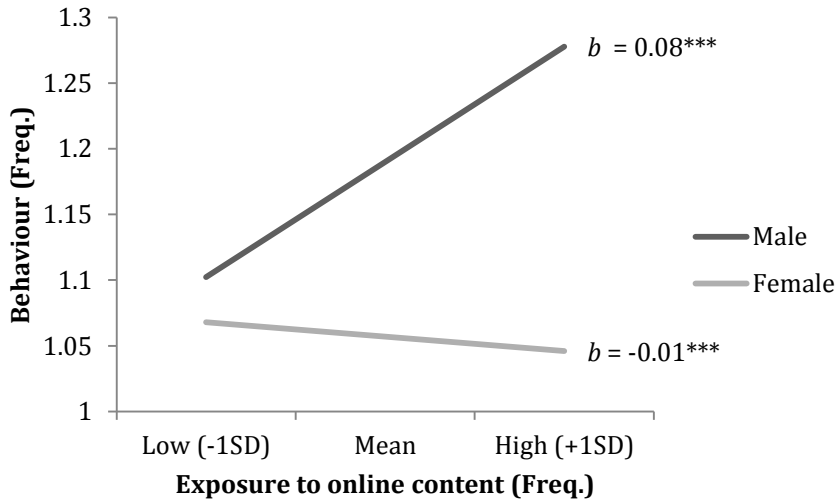

Figure 5.1. Regression slopes showing interaction effect of gender on the effect of online content (IV) on offline behaviour relating to bullying (DV).

For two of the behaviours, ED and SH, no significant main effects of gender were found. This suggests that there is a crossover interaction between online exposure and offline behaviour. Plotting the results of the post hoc regression slopes revealed that for both ED and SH females show a higher frequency than males of these offline behaviours at low online content level, whereas males show a higher frequency than females at high online content level (Figures 5.2 & 5.3).

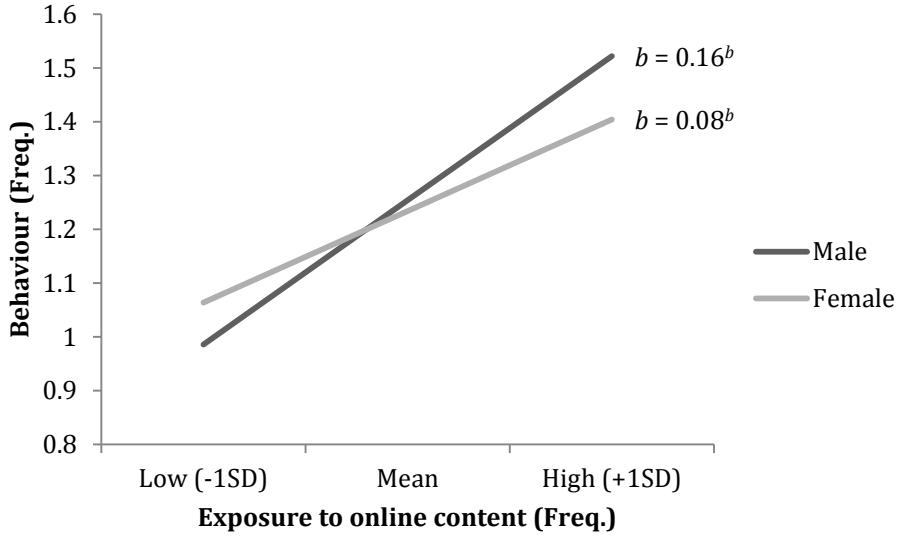

Figure 5.2. Regression slopes showing crossover interaction effect of gender on the effect of online content (IV) on offline behaviour relating to extreme dieting and ED (DV).

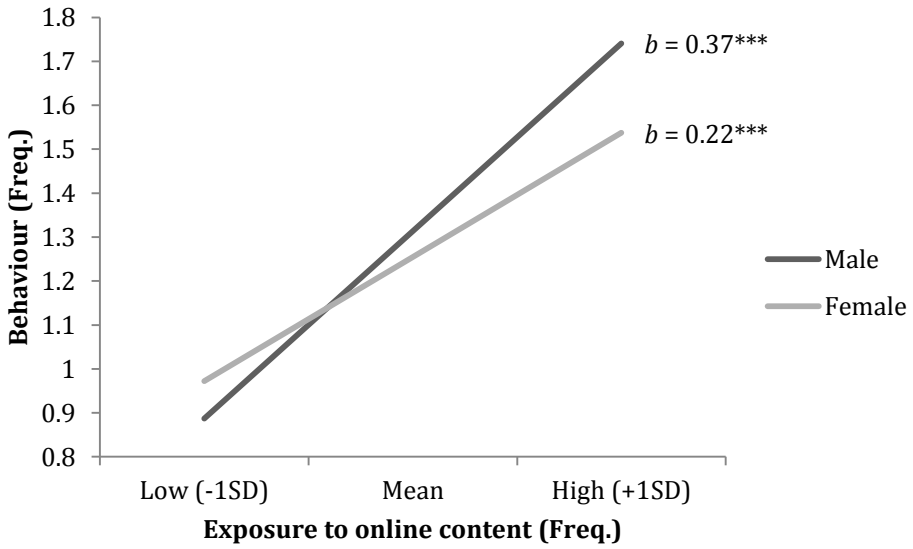

Figure 5.3. Regression slopes showing crossover interaction effect of gender on the effect of online content (IV) on offline behaviour relating to SH (DV).

5.3. Discussion

This phase of study aimed to identify whether there appears to be a link between the content that users are exposed to on social media and their own offline risk behaviour; and whether there are any age and gender differences in the strength of this relationship. The findings suggest that there is a strong direct link between online exposure to risk content and engaging in congruent risk behaviour in the offline environment; this was found for all but one of the nine behaviours (the exception being bullying). These findings suggest that some concerns over the influence of the online environment may be justified. However it is important to note that it is not possible to determine causality from this research. It is not clear whether viewing behaviour online has a direct causal influence upon offline behaviour. There are other potential explanations, for example individuals who already engage in risk behaviour (or have a desire to) may be more likely to actively seek risk content online. Future research should seek to identify methods to determine the direction of the relationship, i.e., whether exposure to online content tends to precede, coincide with, or follow offline risk behaviour. For example, participants could be asked to report when they first saw online content encouraging a specific behaviour and then asked to report the first time they remember engaging in that behaviour. Alternatively a longitudinal study could be used to track social media use and behaviour over time. In doing so, the researchers may be able to identify which behaviour occurred first. It may also be helpful to distinguish between content that participants' actively search for and content that they were unintentionally exposed to through their general social media use. This may help to further explain the mechanisms underpinning the link between online

content and offline behaviour, for example whether content is having an effect upon average, everyday users of social media or whether the affected users are specifically seeking out risk information therefore suggesting pre-existing motivation prior to accessing the content.

There were no significant age differences in the strength of the relationship between online exposure to risk content and offline risk behaviour, suggesting that younger users are no more vulnerable to the effects of online content than their older counterparts. This challenges the popular media view of younger users as the primary user group being led astray by the content that they see online.

The relationship between online content and offline behaviour was moderated by gender for all of the behaviours apart from excessive alcohol consumption and unsafe sex. For six of these behaviours (drug use, violence, ED, SH, sex with a stranger and dangerous pranks), both males and females showed an increase in offline behaviour with increased exposure to online content. However this relationship was stronger for males, i.e., there was a more significant increase in males' offline risk behaviour as online content increased, compared to females. This suggests that males may be more influenced by the content that they see online and/or may be more likely to seek out congruent behaviour prior to, or following, engagement in these behaviours.

Males also showed an increase in bullying behaviour as exposure to online content increased, however interestingly, females showed the opposite effect with their bullying behaviour decreasing with increased exposure to online content. There are several potential explanations for this finding, the first is that online content differs in the effect that it has upon the genders - exacerbating bullying behaviour in males but reducing it in females. Due to a lack of face-to-face feedback, cyberbullying often means that the perpetrator is less likely to see any direct indication of distress from the victim, therefore reducing inhibition of bullying behaviour due to empathy upon seeing the victim's reaction (Smith et al., 2008). However, females tend to be more emotionally expressive than males and more able to activate social support from their peers (Barbee et al., 1993) therefore female victims of bullying may be more inclined to express their distress in response to cyberbullying (or use social media as a platform to explicitly talk about the effects of bullying, e.g., anti-bullying campaigns) and this may lead to empathy and support for the victim(s) from the perpetrator and/or others. In turn, online content may provide negative feedback to female perpetrators and reduce their tendency to engage in bullying behaviours. This is supported by findings which show that female bullies tend to report feeling more 'sorry' about their behaviour compared to males (Borg, 1998). In comparison, male victims may be less likely to express their distress due to social pressures and gender roles emphasizing males as dominant, autonomous and having high

emotional control (Barbee et al., 1993). Therefore the consequences of the bullying behaviour may be less obvious to users resulting in less negative feedback and therefore no reduction in bullying behaviour. This is supported by focus group results which show that internet users often rationalize cyberbullying as "just as bit of fun" or as "entertainment" (Smith, Talamelli, Cowie, Naylor, & Chauhan, 2004). Phase one showed that male users are more likely to use the internet for entertainment purposes, and trolling, suggesting that this may be how they rationalize cyberbullying. Male victims of bullying are also more likely to report feeling vengeful compared to females who are more likely to express feelings of self-pity, again potentially having an influence upon the level of empathy received from the perpetrator and/or others or having an influence on the victims own subsequent behaviour, i.e., likelihood to engage in bullying themselves (Borg, 1998). It is also worth noting that those who use the internet more are more likely to be victims of cyberbullying (Smith et al., 2008), therefore as females use the internet more (as shown in Phase 1), it is possible that this also leads to more awareness of how it feels to be a victim and again results in empathy and less likelihood of bullying others.

Males traditionally display more overt bullying behaviour than females in the offline environment (Olweus, 1993; Whitney & Smith, 1993). This has been attributed to males using bullying as a method to establish dominance (Pellegrini & Long, 2002) and/or social status amongst peers (Sijtsema, Veenstra, Lindenberg, & Salmivalli, 2009). The perpetrator may get 'peer rewards' through sharing their actions with other users who may offer positive reinforcement through supportive comments or actions (e.g., likes and retweets/reblogs); therefore potentially increasing the behaviour. Amusing others in their peer group may help to add to the social prestige associated with their behaviour (Smith et al., 2008). In contrast, females appear to have a more negative attitude towards bullying (Pellegrini & Long, 2002). Consequently, research suggests that many females do not tend to gain social prestige from bullying behaviour, and those that *do* gain some increased perception of prestige, tend to be rejected by their peers. Therefore perceived prestige involves losing social preference amongst their peer group (Sijtsema et al., 2009).

It is also possible that females may sometimes fail to identify online behaviour as bullying. Although males traditionally dominate bullying in the offline environment, females are more likely to be involved in indirect or relational bullying (Smith et al., 2008). Therefore compared to the more explicit nature of male bullying (and even perhaps in relation to female bullying in the offline environment), female online bullying may take a more covert nature. This may lead to females not always recognising this behaviour as 'bullying'. In contrast, females who are adversely affected by bullying content (such as those who are the victims or those who are more sensitive to bullying content) may be the most likely to recognise this material as bullying in nature. This could explain why those females who

report higher levels of bullying content might also be those least likely to engage in this behaviour themselves.

At present it is not possible to determine the nature of this interaction effect between online exposure and gender on offline behaviour, this is something that future research should seek to investigate further.

A more complex relationship was found for ED and SH, with a crossover moderation effect found for gender. Females show a stronger relationship between online exposure to ED/SH content and offline behaviour at lower levels of content exposure, whereas males show a stronger relationship at higher levels of content exposure. The stronger relationship for females at low levels of exposure could reflect the traditionally greater prevalence rate of these behaviours in females (Fairburn & Harrison, 2003; Hudson, Hiripi, Pope, & Kessler, 2007; Lewinsohn, Seeley, Moerk, & Striegel-Moore, 2002; Preti et al., 2009). However the stronger relationship in males as exposure increases suggests that when exposed to average to high levels of ED/SH content on social media, males own risk behaviour increases more strongly than females. This is interesting given that the mass media tends to focus upon female users as those most in danger of adverse effects of content around ED/SH (e.g., Rainey, 2015; Sime, 2015). However, whilst these findings could potentially indicate that males are more vulnerable to the effects of ED/SH content than females, it is necessary to remember that causality cannot be determined. An alternative explanation is that male users who are exposed to higher levels of content are purposefully seeking out this material to aid pre-existing ED or SH behaviours and therefore the behaviour is not directly caused by exposure to online content (although it may be potentially exacerbated by it) but may be a reflecting of gender differences in motivation for searching for/viewing associated content. It is also possible that females may see more posts around ED and/or SH due to the greater prevalence of these behaviours amongst females (whether due to genuine prevalence rates or differences in levels of reporting these behaviours); this could lead to a degree of desensitisation which could lessen the impact that online content has upon their own behaviour. It is also possible that males may be more likely to be triggered by more of the ED/SH content that they are exposed to online (e.g., visual depictions of ED/SH), whereas females may be more likely to be triggered only by specific content or occurrences (e.g., hurtful comments by other users). Future research is required to investigate this further. The second half of this thesis (studies 2 & 3) will begin investigating potential user motivations for sharing ED/SH content - including gender differences - therefore contributing further to our understanding of how male and female users may be engaging with ED/SH content.

To summarise, this phase of study found a strong relationship between online exposure to risk content and offline risk behaviour, suggesting that content on social media may

influence behaviour (and/or users may actively seek risk-related behaviour prior to and/or following engagement in risky behaviours). However, contrary to media speculation and public concern, age did not have an effect upon the strength of the relationship between online exposure and offline behaviour. For the most part younger users do not appear more vulnerable to the effects of online content than their older counterparts. Conversely, gender *does* appear to affect the relationship between social media content and offline behaviour with a stronger effect found for male users for many of the behaviours (drug use, violence, unsafe sex, sex with strangers, dangerous pranks and bullying). Suggesting that male users may be more vulnerable to some negative effects of social media content, and/or use social media content to find material related to their offline risk taking. Average to high exposure to content around ED and SH also appeared to have a stronger effect on male users.

This research provides preliminary evidence that social media use may influence offline behaviour and that gender appears to be a strong moderator of this relationship. These findings lay the foundations for future research to investigate the mechanisms behind this relationship in more depth.

Having established that social media use appears to be linked to risk behaviour, the second half of this thesis aims to explore some of these behaviours in more depth. In particular the following studies aim to investigate the nature of social media content around risk behaviours, for example whether it is being shared for positive or negative reasons. To allow adequate in-depth investigation, and in keeping with the scope of this research, two behaviours are selected: eating disorders (ED: Study two) and self-harm (SH: Study three). These particular behaviours have been selected due to showing a strong relationship between online content and behaviour in the previous study and due to strong media coverage suggesting possible links to social media use (e.g., "Girl posted self-harm photos online before train jump" (BBC News, 14th January 2014) and "Social media helps fuel some eating disorders" (The Journal News, 1st June 2014). In addition to establishing the nature of ED/SH social media content (e.g., positive vs. negative). the following studies also investigate whether particular user groups appear to share more positive or negative content than others; including investigating gender differences.

Chapter 6 begins by providing some background information on the two behaviours, concerns and potential benefits around online ED/SH content and a summary of the existing literature. The chapter then concludes by providing an overview of studies two and three.

6. Introduction to online eating disorder and self-harm communities

In recent years, media headlines have drawn attention to the online communication of two particular risk behaviours: eating disorders and self-harm, e.g., "Girl posted self-harm photos online before train jump" (BBC News, 14th January 2014); "Self-harm sites and cyberbullying: the threat to children from web 's dark side: Child safety groups warn of lost generation as fears grow over mental health of vulnerable teenagers" (The Guardian, 11th March 2014) and "Social media helps fuel some eating disorders" (The Journal News, 1st June 2014). There are numerous online communities for those who display symptoms of EDs and/or SH or those who share a desire to do so (Morey, Eagle, Verne, Cook, & Lane, 2011; Murray, Warm, & Fox, 2006), with many examples of communities that display a pro-ana or pro-SH stance (Csipke & Horne, 2007; for a review see Rouleau & von Ranson, 2011a).As discussed in Chapter 1, the large-scale adoption of social media has made the creation, maintenance and sharing of online content a part of everyday life for many users. Social media is intrinsically linked to the management of one's identity, lifestyle and social relationships (Livingstone, 2008; Wolf, Theis, & Kordy, 2013). The convergence of many separate activities (e.g., messaging, content creation, photo albums, music etc.), ease of access to content (finding content and likeminded individuals online), increased availability of the platforms themselves (e.g., mobile technologies that allow 24/7 access), in addition to a greater emphasis upon social feedback (e.g., likes, reblogs, favourites) have changed the landscape of ED and SH communities. Compared to Web 1.0 websites and internet forums, it is possible that ED/SH material is now more readily available than ever, perhaps even being viewed by users who do not purposefully seek such material but whom find it appears in their social media newsfeed or stream (Andsager, 2014). This is particularly important given the findings from study three (Chapter 5) which suggest that viewing online risk content may be linked to offline risk behaviour.

The majority of published research focuses upon ED/SH communities on Web 1.0 websites and forums (Rouleau & von Ranson, 2011) therefore research into how these communities interact on social media platforms is still in its infancy. It is important that we, as researchers, take the time to understand how, and why, social media users are communicating about these behaviours. In addition to increasing our understanding of the experience of ED/SH in the modern world, this can also help to guide policy and potential interventions (if and/or when required). Users engage with ED/SH communities due to perceived benefits, therefore it is vital that we understand both the negative and positive nature of social media ED/SH-related communication before we begin to consider the introduction of interventions.

Although in its broadest sense the term 'self-harm' could potentially encompass eating disorders as a form of harm inflicted on the body, for the most part the two behaviours are generally regarded as two distinct behaviours/disorders. ED and SH do show high comorbidity (Kostro, Lerman, & Attia, 2014); however the behaviours are generally reported by sufferers to fulfil different purposes, for example self-harm is often reported as a method to regulate painful emotions by the externalisation of emotional pain into physical pain (Haines & Williams, 1997; Paul, Schroeter, Dahme, & Nutzinger, 2002a), whereas disordered eating is often reported as a method to achieve goals of weight loss and/or to provide the sufferer with feelings of control when they may feel that there is little else in their life that they have control over (Fox, Ward, & O'Rourke, 2005).

The Diagnostic and Statistical Manual of Mental Disorders (DSM) also defines eating disorders as a distinct disorder to self-harming behaviour. Self-harm itself has traditionally came under the diagnosis for borderline personality disorder, however due to occurrences of self-harm in cases were BPD has not appeared to be present, it is speculated that the DSM-5 will include a distinct classification for non-suicidal self-injury (NSSI). In keeping with the existing literature, the following studies define eating disorders and self-harm as two distinct – albeit often comorbid - behaviours.

The following chapter begins by briefly defining and introducing EDs and SH. Discussion then turns to concerns around online ED/SH communities and conversely the potential benefits of these communities. This is followed by a review of existing research around the nature of online ED/SH content explaining the need for further research into the type of content being shared online and the users who are sharing it. The chapter will conclude by identifying the specific aims and contributions of the studies reported in Chapters 7-9.

6.1. Introduction to eating disorders

The term 'eating disorder' refers to mental illnesses categorised by disordered eating behaviour; The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013). The DSM-5 recognises three main types of ED: anorexia nervosa, bulimia nervosa, and binge ED. Eating disorders that do not fit into the aforementioned categories are classified either as 'Unspecified Feeding or Eating Disorder' or 'Other Specified Feeding or Eating Disorder' (although social media users occasionally refer to these by the now outdated title of 'Eating disorder not otherwise specified', a.k.a. EDNOS).

The two most common EDs linked to social media use are anorexia nervosa and bulimia nervosa (Borzekowski et al., 2010; Knight, 2014; Livingstone, Haddon, Gorzig, & Olafsson,

2011). Anorexia nervosa is characterised by self-starvation and extreme weight loss. Symptoms include inadequate food intake, skipping meals, and restricting the types and amounts of food eaten. Sufferers may binge and then purge or alternatively may just restrict food. Symptoms can also include over-exercise (Bond, 2012). Sufferers have an obsession with weight and intense fears of weight gain. Bulimia nervosa is also characterised by a preoccupation with weight loss, control of food and body image. However it differs from anorexia in that sufferers will become trapped in a cycle of binge eating and purging through self-induced vomiting or the use of laxatives or diuretics (NEDA, 2014).

It has been estimated that as many as 70 million people worldwide suffer from EDs (Ambrose & Deisler, 2010); with an estimated lifetime prevalence of approx. 0.48% for anorexia, 0.51% for bulimia and 1.12% for binge ED within European countries (Preti et al., 2009) and 0.6%, 1% and 2.8% respectively within the US (Hudson et al., 2007). However, most reported prevalence rates are likely to be an underestimation due to many cases not being clinically diagnosed, sufferers keeping the behaviour private, and many studies being restricted to adults (e.g., Preti et al., 2009). Only 1 in 10 sufferers receive treatment and EDs have the highest morbidity rate of any mental illness (NEDA, 2015).

Females are more likely than males to report having an ED (Fairburn & Harrison, 2003; Hudson et al., 2007; Lewinsohn et al., 2002; Strong, Williamson, Netemeyer, & Geer, 2000). Some research has suggested that females are 3-8 times more likely to experience an ED compared to males (Preti et al., 2009), whereas other research suggests that the difference in prevalence may actually be as low as 1 ¾ - 3 times higher for females and that males may account for around 1 in 4 cases (Hudson et al., 2007; Hoek & van Hoeken, 2003; Kjelsås, Bjørnstrøm, and Götestam, 2004;).

EDs have been linked to biological and genetic factors, psychological factors (e.g., low self-esteem, feelings of inadequacy, depression and anxiety), interpersonal factors (troubled personal relationships, difficulty expressing emotions, bullying, physical and/or sexual abuse) and cultural and sociological factors (e.g., pressure from society to be thin) (Ambrose & Deisler, 2011; NEDA, 2014).

Many believe that EDs can be caused or exacerbated by strong cultural pressures that glorify “thinness” and the “perfect body” (e.g., Lewinsohn et al., 2002). The National Eating Disorders Association (NEDA, 2014; 2015) describes society as having very narrow definitions of beauty that only include women and men of quite specific body weights and shapes; and that society often places value upon people based on the basis of physical appearance and not their inner qualities. A study by Spitzer, Henderson, and Zivian (1999) compared body sizes of Playboy models, Miss America pageant winners and Playgirl

models (the latter being male) across four decades. They found that the average body size for all Playboy models and Miss American winners was at its all-time low and all of the models were underweight, with approximately one third of the Playboy models and 17% of the pageant winners meeting the World Health Organisation's BMI criterion for anorexia. In comparison the male Playgirl models' body size increased over time and none of these models were underweight. This could represent the different gender body ideals of the thin female body and the large muscular male body. These differences in cultural expectations could help to explain gender differences in the prevalence of EDs and is further reflected in findings that males who *do* display ED symptoms tend to be more likely to excessively exercise compared to females (Weltzin et al., 2005). The differences in body size across the decades represents an ever increasing gap between the population average body size and the media average body size (particularly in regards to females), potentially fuelling increased levels of body dissatisfaction through the normalisation of extreme body sizes (Green et al., 1997). There are concerns that social media could be communicating cultural pressures and 'ideals'. This issue is discussed in more detail in section 6.3: 'Concerns about the influence of online communities'.

6.2. Introduction to self-harm

Self-harm refers to an individual inflicting harm upon their body purposefully and for reasons not socially sanctioned (e.g., tattooing, piercings, cultural body modification) without the obvious intention to commit suicide (Bunclark & Adcock, 1996; McAllister, 2003; Whitlock, Eckenrode, & Silverman, 2006). Some common forms of SH include cutting, burning, severe scratching or pinching, needle insertion, hair pulling, ingesting toxic substances, bruising, breaking bones and wound interference (Gratz, 2003; Osuch, Noll, & Putnam, 1999; Whitlock et al., 2006). Individuals often report engaging in SH as a method of coping with extreme negative emotion (Favazza, 1989; Gratz, 2003; Paul, Schroeter, Dahme, & Nutzinger, 2002). Therefore SH may function as a method to regulate painful, intolerable emotions by the externalization of emotional pain into physical pain (Haines & Williams, 1997; Paul et al., 2002a). Others describe it as a form of emotional avoidance, to escape emotions, again possibly through the alteration of the pain from an emotional to physical form (Gratz, 2003). Pain that is more physical and tangible can be easier to understand than emotional pain.

The average age of onset in clinical populations is middle to late adolescence, followed by a decline in early adulthood (Briere & Gil, 1998; Favazza, 1996; 1999; Herpetz, 1995; Whitlock, Eckenrode & Silverman, 2006). A recent study by the Center for Adolescent Health at the Murdoch Children's Research Institute suggests that around 1 in 10

teenagers SH (Moran et al., 2012). Other research has suggested that prevalence is as high as 25% amongst middle and high school students (Brausch & Gutierrez, 2010; Toste & Heath, 2010), with a lifetime prevalence amongst adolescents of around 16-18% (Muehlenkamp, Claes, Havertape, & Plener, 2012). These figures, similarly to the those for EDs, are likely to be an underestimation as rates of detecting and treating SH are very low (Whitlock et al., 2006).

Although commonly thought of as a predominantly female behaviour, there is mixed evidence regarding whether females are actually more likely to SH (Briere & Gil, 1998; Stanley, Gameroff, Michalsen, & Mann, 2001). The UK Mental Health Foundation (2000) suggests that women are twice as likely to SH than men, a bias repeatedly reported in other research (Hawton, 2000; Patton et al., 2007; Suyemoto, 1998). However, some researchers believe that the perceived gender difference may be due to women being overrepresented in clinical populations and/or due to an emphasis upon cutting which women are more likely to use as a method of SH compared to males who may prefer other methods such as hitting a hard object (Whitlock et al., 2006). There is also a growing concern that this behaviour may be increasing within the male population (Moran et al., 2012).

There is a wide body of research to suggest that SH is distinct from suicidal intentions (Osuch et al., 1999). Whereas suicidal behaviour is seeking to end life, SH is often described as a coping mechanism (Gratz, 2003), an emotional outlet (Brown, Comtois, & Linehan, 2002), a cry for help and for survival (Dunleavey, 1992). Although the behaviours are distinct in purpose, it has been estimated that individuals who SH are 18 times more likely to commit suicide than the general population (Ryan, Clemmett, & Snelson, 1997). However, existing research suggests that this is the result of an underlying factor of extreme distress, rather than SH necessarily being on a continuum with suicide (McAllister, 2003). This link to suicidality is just one example of the importance of research into online SH communities.

McAllister (2003) argued for the need for greater recognition that SH is rooted within society and culture. It is likely that SH is a combination of biopsychosocial factors which operate within the cultural context (Favazza, 1996). Because social contexts are important, this should be addressed by expanding our focus beyond treatment of the individual to also working to enhance their social situation, for example by helping to build positive social sources of support. As social media is intrinsically linked to social and cultural context, it is possible that online interactions could have an impact upon SH behaviour; this is discussed in more detail in the following sections on the concerns and potential benefits around online communities.

6.3. Concerns about the influence of online communities

As aforementioned, there are many online communities for the sharing and/or discussion of ED/SH related content (Morey et al., 2011; Murray et al., 2006). The major concern with the existence of ED/SH online communities is the transmission of this information to vulnerable individuals; ranging from healthy individuals who may be influenced to engage in ED/SH behaviours following exposure to this content, through to the 'triggering' of individuals who may already have the onset of these behaviours and/or may be in remission (Bond, 2012; Brotsky & Giles, 2007; Rouleau & von Ranson, 2011). It has been suggested that EDs and SH may show signs of social contagion (Vandereycken, 2011), the latter of which has been shown to display epidemic-like patterns in hospitals and detention facilities (Taiminen, Kallio-Soukainen, Nokso-Koivisto, Kaljonen, & Helenius, 1998). It is also possible that the behaviours may have addictive qualities (Nixon, Cloutier, & Aggarwal, 2002), further increasing concerns that online communication may trigger and spread this behaviour within vulnerable populations (Whitlock et al., 2006).

Of particular concern are 'pro' communities that arguably aim to encourage ED/SH behaviour. For example, there are many pro-ana (also known as pro-anorexia or pro-ana) communities that often construe anorexia as a lifestyle choice rather than a disorder that is to be treated (Bond, 2012; Syed-Abdul et al., 2013; Wilson et al., 2006). By encouraging each other to engage in associated ED/SH behaviours, pro- communities can normalise the behaviour by making the user feel that it is acceptable, justifiable and sometimes even desirable (Schroeder, 2010). In one study, 96% of pro-ana website users reported learning new strategies [for engaging in disordered eating] via pro-ana websites, of which 69% reported having used these strategies (Wilson et al., 2006). Another concern is the potential for pro- communities to glorify or romanticize ED/SH behaviours, for example by portraying the behaviours as 'tragically beautiful' (e.g., Bine, 2013), and/or that an element of 'competition' or comparison within these communities may encourage users to reach more dangerous levels of harm (e.g., Bond, 2012). Mabe, Forney, and Keel (2014) conducted a survey of 1960 female users of the social media platform Facebook. They found that frequency of Facebook use was associated with greater reported disordered eating, i.e., women with greater eating pathology reported spending more time on Facebook. They also reported engaging in more appearance-focused behaviours online, e.g., comparing themselves with friends' photos, untagging unflattering photos etc.; suggesting that comparison to peers may be a potential mediator of the relationship between social media use and the maintenance of ED risk. They followed this with an experimental study of 84 female participants who were asked to either use Facebook or a 'control' site for 20 minutes (the control site was Wikipedia and YouTube and involved

researching the ocelot, a 'neutral' rainforest animal). They found that Facebook use was linked to the maintenance of weight/body shape concerns and state anxiety. This is linked to concerns that the sharing of thinspiration (i.e., images of thin women shared to provide inspiration for the viewer to lose weight) could contribute to increased body dissatisfaction, decreased life satisfaction and ED symptoms. Recent findings by Ferguson, Muñoz, Garza, and Galindo (2014) suggest that frequency of social media use does not predict body dissatisfaction or life satisfaction. Although a small predictive relationship was found for peer competition, echoing the findings by Mabe et al. (2014) and suggesting that social media may be a platform through which peer competition and comparison may have an indirect effect on eating behaviours in vulnerable individuals.

Many pro-ana/SH communities portray a willingness to accept individuals who engage in ED/SH behaviour, but they may differ in the degree to which they are anti-recovery; whilst some sites seek to mainly offer support for users, others explicitly aim to motivate and encourage users to engage in ED/SH behaviour - sometimes taking an aggressive anti-recovery and anti-treatment stance (Rouleau & von Ranson, 2011). Even if an anti-treatment stance is not stated, Rouleau & von Ranson believe that these communities could still prevent treatment:

> Pro-ana does not necessarily mean anti-recovery but treatment seeking may be discouraged through the validation of their eating-disordered identities, the opposition toward medical conceptualizations and interventions and the transmission of information about concealing ED symptoms from significant others (p. 530).

Some researchers argue that the *pro-* label itself carries a connotation of being anti-recovery even if this is not explicitly stated and they believe that this could lead to members of these communities being discouraged from seeking treatment for disorders (Fox et al., 2005). Although it is worth noting that traditionally individuals with ED/SH rarely seek treatment on their own initiative, instead this is usually a consequence of concerned friends and family requesting help on their behalf (Vitousek, Watson, & Wilson, 1998).

Public and governmental concern around ED/SH communities rose further in 2012 following the tragic deaths of Rosie Whitaker and Tallulah Wilson. Fifteen-year old Rosie Whitaker committed suicide by stepping in front of a train in South-East London. Suffering from bulimia and in recovery from SH, Rosie had accessed 'thinspiration' and pro-ana material online shortly before her death ("15-year-old died in front of a train after being lured into an online world of self-harm and suicide", Daily Mail, June 13, 2012). Not long after Rosie's suicide, Tallulah Wilson also took her own life by standing in front of a train

at Kings Cross, London. In the weeks preceding her death, Tallulah had posted SH images on the blogging website Tumblr and her mother has since described her daughter as being embroiled in a "toxic digital world" ("Mother urges internet awareness after daughter's suicide," BBC News, 2014). These tragedies, alongside existing concerns around extreme online communities (Pelt, 2009), resulted in a call for more research ("Tallulah Wilson inquest: Coroner asks 'how could everybody have got this so wrong?", Hampstead and Highgate Express, 2014). Tumblr released a statement stating that "in the very near future" the platform would prohibit content "that actively promotes or glorifies self-injury or SH" ("Tumblr Staff Blog," 2012). To date this does not appear to have happened, largely due to problems with enforcing this guideline, e.g., deciding whether a blog is encouraging SH or simply communicating about it. Tumblr was criticized at the inquest into Tallulah's death when the coroner urged the government to take action over web safety and warned of further possible fatalities (Davey, 2014a). Tumblr has since confirmed that it is in talks with the UK government as part of attempts to improve user safety, and in April 2014 the Health Secretary Jeremy Hunt announced that psychiatrists would now get compulsory training to promote mental wellbeing in the media to children and their families (Psychiatrists to be trained to help protect children online, London Evening Standard, 2014).

These tragedies are not the first time that SH related suicide attempts have been linked to Tumblr, a girl identified as 'Charlotte', took an overdose following use of extreme community blogs. She survived but with a badly damaged liver. Charlotte used Tumblr anonymously whilst suffering from an ED and SH and she is quoted as saying "[…]the fact that I used Tumblr in that way, I think that it did have a big influence" (Greg Dawson, 2014). Safety concerns are at their greatest in regards to young and adolescent users who may be more vulnerable to the negative effects of ED/SH content. Users in this age range account for the majority of social media users. This provides another example of the importance of research looking at the type of content available to users and the impact that this may have.

Three key studies have attempted to gather evidence for a causal link between the viewing of online material and disordered eating behaviour (Bardone-Cone & Cass, 2007; Jett, LaPorte, & Wanchisn, 2010; Wilson et al., 2006). Wilson et al. found that the use of pro-ana websites was associated with the number of previous hospitalisations in a sample of individuals currently being treated for EDs. However, they did not find any association with other measures of ED 'severity' (i.e., percentage of ideal body weight, bone mineral density or number of missed menses). Rouleau and von Ranson (2011a) offered the alternative explanation that individuals may be learning about these websites from others with EDs whilst in hospital.

Bardone-Cone and Cass (2007) and Jett et al. (2010) applied experimental approaches to identify a link between pro-ana websites and ED-related behaviour. Together the studies show that viewing pro-anorexia websites can result in healthy participants experiencing higher perceptions of being overweight, higher levels of negative affect, lower levels of social self-esteem, lower appearance self-efficacy and an increased likelihood of exercising and decreased calorie intake. No significant changes were found for control groups viewing 'neutral' websites (home décor, fashion, health and tourist websites).

Bond (2012) identified 4 ways in which she feels pro-ana content can influence internet users: Perfection, Performance, Protection and Paradoxes:

1. Perfection – "Starving for *perfection*" is a common phrase amongst the pro-ana communities and their socially constructed idea of perfection fuels a lot of their pro-ana behaviour; this includes thinspiration and the normalisation of an emaciated body image. This pursuit of perfection can result in, or be a consequence of, lowered self-esteem, which is also linked to EDs.
2. Performance – this relates to pro-ana behaviours and the adoption of a particular role, e.g., pro-ana website users have been known to describe themselves as a 'successful ana' or a 'failing ana'. By defining themselves in this manner, the ED effectively becomes part of their self-concept. It is in performing and creating these roles that the ED mentality may be strengthened and become increasingly resistant to change. This encourages a group mentality and reinforcement of the 'in group' (ED community) and the 'out group' (general population, non-ED friends and family, and medical professionals).
3. Protection – Strongly linked to 'performance'; as ED becomes part of the individuals' self-concept and social identity they seek to protect this through preventing recovery, isolating themselves from others 'outside' of the ED community and defending ED behaviours.
4. Paradoxes – users often recognise that online communities may worsen their condition but they also perceive benefits of the ED communities, which leads the user to a paradox.

For ethical reasons, it is not possible to explore the impact of SH websites upon viewers' behaviour from an experimental perspective. However, Harris and Roberts (2013) asked users of SH sites for their feedback on how their use of these sites affected their behaviour. They found that a small minority of participants reported negative effects of SH websites, although a greater percentage of participants reported positive effects. One of the former participants is quoted below:

> I used [the websites] as a teenager and in retrospect I can see that it made my self-harming worse because the only thing the users had in common was self-harm. It's good to talk about it, but it was all that we talked about. I do not believe that surrounding myself with other self-harmers was good for me. (p. 8).

These findings suggest that the content viewed online can have an impact upon viewers' behaviour. This helps to strengthen concerns over the effect of pro-ana/SH content. Concerns that are heightened further due to social media being heavily used by younger users - the age group most affected by ED/SH (Arcelus, Mitchell, Wales, & Nielsen, 2011). These concerns generally result in a call for interventions based upon one of the following:

1. Censorship: removal of ED/SH content from the platform. This is difficult and almost impossible to police as often platform moderation teams cannot deal with the sheer amount of new content being shared and/or it is often difficult to identify which content is negative in nature, i.e., potentially encouraging or triggering. Therefore censorship becomes either too sparse or alternatively so stringent that it makes it difficult for users to find *any* content relating to ED/SH (some of which may be beneficial if relating to recovery or seeking help).
2. Warning messages: online alerts that are displayed to users explaining that content associated with ED/SH keywords or search terms can have the potential to be upsetting and/or triggering. However these generic messages appear regardless of the type of ED/SH content actually being returned by the search, i.e., users have to bypass this message even if searching for positive content (e.g., seeking information regarding recovery). Thus effectively rendering the warning meaningless and over time, unlikely to have any effect upon users.

It is important that we truly understand the nature of online communities and their users before introducing interventions. For example, there are concerns that warning messages (such as those implemented by Tumblr) may not be effective and may actually sensationalize and promote the behaviour. Murray et al. (2006) found that some participants in their study would either ignore SH 'trigger warnings' (warnings that content may 'trigger' SH behaviour in vulnerable individuals) or worse, would selectively read posts with warnings due to actively seeking to be triggered by the material. Similar findings were also found by Lewis, Heath, Denis, and Noble (2011) in relation to pro-anorexia websites. This is one example of how inadequate knowledge can result in the introduction of interventions that worsen rather than address the issue. Similarly, if ED/SH communities have benefits for the individuals involved, censorship of ED/SH content may have the potential to have a detrimental impact upon the user rather than the

protective effect intended. The potential benefits of online communities are covered in more detail in the following section.

6.4. Potential benefits of online communities

As aforementioned, there are benefits associated with ED/SH communities. Not all online communities encourage 'pro' attitudes towards ED and SH. Prasad and Owens (2001) conducted a meta-search of SH websites and found that sites generally offered positive information, guidance and advice on preventing SH. This included discussing alternative behaviours to SH (e.g., drawing on the skin with a marker pen), providing contact details for helplines and organisations, and advice on dealing with shameful feelings. Prasad and Owens concluded that the advice available was similar to that provided within communities for cancer survivors. Further research suggests that even *pro-* communities are not always strictly anti-recovery, for example some ED sufferers report having found recovery information on pro-ana websites, a phenomenon which Schroeder (2010) terms the "pro-ana and recovery overlap". Although not typical of every pro-ana/SH resource, many do feature information on recovery amongst the other content and some communities have been found to be supportive of users who decide to seek treatment (Brotsky & Giles, 2007; Csipke & Horne, 2007; Lipczynska, 2007). Therefore it is possible that social media provides a platform through which users can find help and guidance - this is particularly important as sufferers with ED/SH rarely seek professional help (Vivekananda, 2000; Whitlock et al., 2006). Furthermore, if users are accepting of online help and guidance this suggests that social media may also provide a platform through which to reach vulnerable individuals that would not otherwise be reachable by health organisations and charities.

Perhaps the main identified benefit of online communities is social support. This is particularly important when considering EDs and SH, as these are characterised by a perceived lack of social support and feelings of loneliness and stigmatisation (Laye-Gindhu & Schonert-Reichl, 2005). A study of individuals with bulimia found that those who are in remission report having more emotionally supportive connections than those still suffering with bulimia (Rorty, Yager, Buckwalter, & Rossotto, 1999) - suggesting that social support is associated with positive outcomes for individuals with EDs. Social support has also been indicated as a mediator of SH with individuals who report experiencing support from a significant other having a decreased risk of SH behaviour (Christoffersen, Møhl, DePanfilis, & Vammen, 2014). Research has shown that individuals who feel isolated are more likely to be drawn to the internet as a form of communication (Hwang, Cheong, & Feeley, 2009). Given the main premise of social media sites, i.e., to

provide a platform for social interaction with others, it is to be expected that individuals seeking social support may turn to platforms such as Twitter and Tumblr. Individuals with ED/SH can become trapped in a vicious circle of using their harming behaviour to escape emotional distress. However, the ED/SH behaviour itself may then result in further negative emotion (such as shame, guilt or regret; Favazza, 1989) and isolation as a consequence of stigma and negative reactions received by others. For individuals who feel misunderstood and stigmatised social media can offer a welcome place of refuge (Rouleau & von Ranson, 2011); and an environment where sufferers feel free to express views and opinions that they feel would be negatively judged within the offline world (Bargh, McKenna, & Fitzsimons, 2002). This has been supported by research by Adams, Rodham, and Gavin (2005), who conducted online interviews and focus groups with self-harming individuals recruited through social media. Adams et al. suggest that users discuss SH online in an attempt to overcome their struggles with feeling socially isolated and the perceived need to present a fake persona to the offline world (i.e., the need to hide their true self and their SH behaviour). Users feel that they can reveal their 'true self' online and in return can receive positive external validation from others.

Similarly, Csipke and Horne (2007a) found that users of pro-ana websites report that frequently visiting these sites is associated with improvements in their self-esteem and a decreased feeling of loneliness. Therefore it seems that online communities can potentially benefit users' wellbeing. However it is important to note concerns over the source of online support and external validation. Adams et al. (2005) raise concerns that online communities may be detrimental if external validation is received from other self-harmers as this could potentially exacerbate SH behaviour and reinforce the SH identity. This suggests a need to understand what type of ED/SH content is being shared online and who is sharing it - this is discussed further in the following section.

Another potential benefit of online communities is the raising of awareness amongst the general population - this could include reducing inaccurate stereotypes and negative stigma surrounding ED/SH. Social stigma has a knock on effect on diagnosis and therefore effective treatment of sufferers as medical professionals can seek to 'protect' their clients from negative stereotypes by not 'labelling' the behaviour (McAllister, 2003) and sufferers are often discharged from emergency departments without referral (Dennis, Owens, & Jones, 1990). Online communication about ED/SH has the potential to increase awareness in the wider population. As identified by McAllister, society needs to make a change towards reducing stigma and encouraging the disclosure of these behaviours and to develop a culture of acceptance, support and tolerance for those affected.

Other benefits of online ED/SH communities may be a little harder to initially recognise. Morey et al. (2010) explains how the imagery used within extreme communities may be

misconstrued by external viewers as glamorising or normalising SH but in fact these images may act as a method of acknowledging the experiences and emotions involved in SH and may provide "emotional and atmospheric viewing experiences" (p. 16) which may actually fulfil some function for self-harming users. Although these SH images could potentially trigger SH behaviour, it is also possible that these images may provide a form of catharsis and may release pent up emotion that would usually lead to SH or alternatively may enable the user and/or viewer to experience some of the emotion felt during SH therefore reducing the need for the actual behaviour.

By identifying the type of ED/SH content being shared on social media and the users sharing this content, it may be possible to make inferences as to the purpose that social media fulfils. The following section discusses the existing literature around the types of ED and SH content that is being shared online.

6.5. The type(s) of eating disorder and self-harm content shared via social media

The previous section discussed the concerns and potential benefits of online ED/SH communities and introduced research that suggests online content may have the potential to impact upon users' well-being and behaviour. If users can potentially be influenced by the content that they are exposed to online (as demonstrated in Studies 2 & 3), this raises the question - what type of content is actually being shared? Therefore the following section reviews the existing literature and explains what we do - and do not - currently know about the type of ED/SH material that users are sharing online. As aforementioned, previous research into online ED/SH content focuses upon more traditional websites and internet forums prior to the mass adoption of social media (section 1.3). Studies specifically on social media platforms are still in their infancy. The following section discusses the existing literature and highlights gaps in the current body of knowledge.

6.5.1. Existing research into eating disorder content on social media platforms and rationale for Study 2

The studies discussed in this section analysed ED-related social media data using content analysis. Firstly, Juarascio, Shoaib, and Timko (2010) investigated a small sample of pro-ana groups on MySpace and Facebook (N = 26). Content shared within the groups included 'thinspiration' photos (a.k.a. thinspo), i.e., photos depicting thin individuals designed to act as inspiration for the viewer (and/or sharer) to lose weight. Thinspiration photos can range from a healthy slender physique to photos depicting more extreme, emaciated and skeletal individuals (sometimes referred to as bonespo). In their study

Juarascio et al. identified images of emaciated females and photos of specific body parts (e.g., hip bones, collar bones). Other content included thinspiration quotations ('motivational' quotations encouraging fasting or weight loss), and links to pro-ana related pages, sharing of weight information, sharing of food records or 'diaries' and hints and tips on engaging in disordered eating. Group members also shared statements of support and friendship to other members and the researchers concluded that social support appeared to be one of the main aims behind pro-ana groups, although they highlight that further research is necessary to identify if this support is likely to have a positive or negative effect on the users (as aforementioned in section 6.4 regarding concerns around the source of online support).

Whilst the findings from Juarascio et al. provide an indication of the type of ED content available on some social media platforms, they are limited to pro-ana content, and specifically content shared within dedicated ED *groups* on the platforms (rather than just shared in general on the users' profiles). Therefore the study does not provide the 'bigger picture' in relation to overall ED/SH content, and more general everyday social media sharing of content. It is possible that the behaviour found within dedicated groups may differ from that shared more generally as groups provide an environment more akin to the web 1.0 websites and forums, particularly in relation to the 'closed' groups included in Juarascio et al.'s study (i.e., private groups not accessible to anyone outside of members of the group who have to be pre-approved by the group administrator). The content of these groups is not visible to friends and family of the users (unless they are also group members) and may not play such an integral part in the portrayal of one's overall online identity. This is supported by Juarascio et al.'s findings that many of the posts within the group involved members asking how to hide group membership from their friends and family.

The sample for the Juarascio et al. study was collected by searching for groups using the terms pro ana, pro mia, pro ana mia, thinspiration, anorexia, bulimia, anorexia and bulimia, eating disorders, and the names of four unspecified actresses whom the researchers believed to be frequently referred to on pro-ana websites. However, the researchers do not disclose how they chose which terms to include in their search, e.g., there is no mention of any systematic system used to ensure that the most relevant search terms were selected. Study two (Chapter 8) improves upon this by applying a more comprehensive and systematic approach to sampling. Furthermore, Juarascio et al. did not include any quantitative coding or testing for differences between the platforms - something that they personally highlight as an area for future research. This is also addressed within study two.

A more recently published study by Tong, Heinemann-Lafave, Jeon, Kolodziej-Smith, and Warshay (2013) conducted a content analysis of pro-ana blogs by classifying content as visual, musical or textual. Tong et al. collected a sample of 48 blogs by conducting a Google search for terms including "pro ana blog" and "pro ED blog" (the full list of terms was not specified and as with Juarascio et al., no details were provided regarding how the researchers selected the most appropriate search terms to use). They found that the most prevalent content on these blogs were visual elements (featured on 79.2% of the blogs), followed by textual sharing of quotations (31.3%) and poetry (10.4%). A small proportion (2.1%) featured audio in the form of music. Similarly to the findings by Juarascio et al. (2010), they found strong evidence of messages portraying support to other users. They identified the main types of support as: informational support (facts and advice, e.g., what to eat and how to exercise), emotional support (offering empathy, sympathy, encouragement etc.), esteem support (compliments, e.g., "you don't look fat") and network support (building structural network connections within the group, e.g., "check out User X's pro-ana blog"). On a few occasions tangible assistance was offered, for example completing a task in direct response to a request such as a user asking others to join in with a weight loss challenge. The most common support messages were those offering emotional support and those where users were engaging in reciprocal self-disclosure about ED.

Tong et al. identified that many pro-ana bloggers included a 'goal weight' on their user profile, i.e., a weight that they hoped to obtain in the future by losing weight. Although focusing upon blogs, the researchers did not specifically target popular social media platforms; instead they used a traditional internet search engine to identify blogs. No information is reported as to which platforms were included in the sample. This restricts our ability to identify the social environment of the blogs in question and to identify how 'typical' these are in relation to general everyday social media use. Furthermore, the study was also restricted to *pro*-ana blogs therefore it is not clear how representative these blogs are of online communication around ED more generally. Study two aims to address this by focusing upon two of the most common social media platforms, Twitter and Tumblr; and investigating all communication around ED rather than restricting the sample to pro-mentality content (refer to section 6.6.1 for more detail on the rationale behind choosing these specific platforms).

The type of pro-ana content on social media appears to share similarities with that shared by more traditional ED/SH websites and internet forums, for example Borzekowski et al. (2010) conducted a content analysis of pro-ana websites and revealed that thinspiration images featured on 85% of the sites, and 83% of the sites offered overt suggestions on how to engage in disordered eating behaviours (i.e., how to be a 'successful ana'). Content

portrayed common themes such as striving for success, control and perfection. Bond (2012) found that users share progress photos of their weight loss, around which there sometimes appears to be an element of competition to be the user who loses the most weight, i.e., the most 'successful ana'. Bond also found that some of the ED content shared appeared to have a 'religious-type quality', i.e., portraying ED akin to a religion.

However, Borzekowski et al. (2010) also found that some users included 'trigger warnings' about the content that they shared, i.e., warnings to other users that the content may have the potential to trigger or worsen ED behaviour, and 38% of the pro-ana sites in their sample included recovery orientated advice and/or information. Thirteen percent of the sites that included pro-recovery content also included content that challenged the pro-ana mentality – referred to here as anti-ana. Anti-ana content included anti-thinspiration photos of those who had died from their ED, photos of recovered ED sufferers now at a healthy weight, and content highlighting how images are altered by the media and therefore portray an unrealistic 'ideal'. It is worth noting that Borzekowski et al.'s study only included pro-ana websites and still found a relatively high percentage included pro-recovery and anti-ana information, this suggests that pro-ana communities may not be entirely negative and that content being shared in the wider ED community may be even more positive. Borzekowski et al. (2010) identified the need for future research to focus upon the sharing of ED content on social media as technology has already moved on since they collected their data and they suggest that the greater interactivity afforded by these new platforms may affect how this content is communicated and/or the impact this may have upon users. They also identify that attempts to regulate pro-ana content cannot advance without more knowledge on the type of content being shared. Study two of this thesis advances the existing knowledge by analysing ED content on popular social media platforms. Furthermore, the study does not limit analysis to pro-ana content but aims to capture all ED content shared (including pro-recovery and anti-ana), therefore providing the 'bigger picture' of the phenomenon under investigation.

In summary, the existing research shows a tendency to focus upon pro-ana content, study two addresses this limitation by utilising a sampling methodology designed to capture a broader range of ED content (section 7.1). In addition, the study investigates individual differences in users who share particular types of ED content. This will identify whether particular user groups appear more likely to share negative content, e.g., pro-ana content, and therefore may potentially be more at risk to adverse consequences of social media use. Also previous research has not investigated whether particular social media platforms differ in the role that they provide for users communicating about ED. For example, Tumblr has arguably received more negative press than any other social media platform in relation to pro-ana behaviour. Research is required to identify if there is

something about this specific platform that is encouraging more negative ED content compared to other platforms like Twitter, or whether communication of ED content is consistent regardless of the platform chosen to share it. Study two therefore addresses this gap by incorporating between-platform comparisons of two popular social media platforms, Tumblr and Twitter (the rationale for examining these two platforms is discussed in section 6.6.1).

6.5.2. Existing research into self-harm content on social media platforms and rationale for Study 3

There is very little research (Lewis et al., 2012; 2011) into the communication of SH content on social media platforms. Even research into SH websites and forums is limited. For example, from 4313 research papers identified by searching for SH related terms, Daine et al. (2013) found only 16 papers which investigated online websites about SH *and* reported primary empirical data. Furthermore, at least 8 of these 16 studies included suicide in their findings, and therefore did not clearly distinguish suicide and SH as separate behaviours. The review did however identify that both positive and negative content was being shared on SH communities. Positive content included messages seeking or offering support (including support for efforts not to SH and encouragement to seek help) and content reinforcing positive recovery behaviours (e.g., congratulations on staying 'clean' from SH). Potentially negative content included that which may normalise SH (e.g., discussing the behaviour in a routine manner), content advising how to conceal SH from others (Smithson et al., 2011) and the sharing of SH techniques (Eichenberg, 2008).

Adler and Adler (2012) analysed information gathered through communications with self-harming individuals over a period of many years. This data included a mixture of in-person and telephone interviews and information gathered by the researchers through their own active involvement in online discussions on SH websites. Similar to the aforementioned studies, they discovered that some of the SH content shared online was more positive than others. Some of the more negative content included suggestions for methods of SH and pro-SH content portraying SH as a voluntary life choice and long-term coping mechanism. Similar to the pro-ana mentality discussed in the previous chapter, pro-SH content actively encourages users to embrace their SH and not regard it as a negative behaviour. Other content included advice on how to deal with the physical consequences of SH (e.g., caring for injuries) and how to manage relationships with friends and family. Some of the potentially more positive content included users sharing their own experiences with others who understand, messages offering to help others

recover and content indicating that the user had managed to stay clean from SH (or congratulating others who had managed to do so).

One of very few social media SH studies is that by Lewis et al. (2011) who investigated SH content on the popular video sharing website, YouTube. Using YouTube's search engine and the search terms 'self-injury' and 'self-harm', Lewis et al. selected the top 100 most viewed videos from the results and analysed these using a mixed methods approach. They found that the majority of videos were factual/educational (53%) and/or melancholic, i.e., expressing negative emotional pain such as depression and hopelessness (51%). Explicit imagery of SH was common with 90% of videos featuring a 'character' (i.e., a person speaking/presenting the video) including photos of SH and 28% featuring actual 'in action' SH. The majority of the videos (58%) did not include warnings about the content. However, the researchers only coded 7% of the videos as explicitly *pro*-SH.

A follow up study by Lewis, Heath, Sornberger, and Arbuthnott (2012) analysed the comments that other users left in relation to the videos identified in the aforementioned study (i.e., Lewis et al., 2011). The results revealed that the most common type of comment (accounting for 40% of the sample) involved users sharing their own SH experiences. These comments were analysed according to whether the individuals discussed recovery; the findings revealed that over half (51.2%) of the videos made no mention of recovery and 40.6% explicitly indicated that the individual was still self-harming. Only 8.5% stated that they had recovered from SH and even less (4.5%) indicated that they wished to recover. Lewis et al. suggest that individuals view SH content on YouTube as a way to share their SH stories with an understanding audience. Study three expands upon this research by investigating a broader range of SH content on the Tumblr and Twitter platforms (e.g., video, text, audio, hyperlinks, images and gifs). In doing so, the study will provide a more comprehensive understanding of the type of SH content that is being shared online.

Harris and Roberts (2013) highlight the need for researchers to remember that the virtual world is constantly changing and emphasise the importance of researching "new types of sites and social media, such as Tumblr and Twitter, which many [of their] participants reported using more frequently now than the forums they previously used." (p. 16). They echo the need to understand whether "harms/benefits may exist relevant to specific sites" (p. 17). Study three addresses this need for research into the platforms mentioned by Harris and Roberts and also the need for between-platform comparisons to investigate potential platform-specific effects upon the type of SH content shared by users. In addition, the study will investigate individual differences in the users who share particular types of SH content. This will identify whether particular user groups appear to be more

likely to share negative content, for example pro-SH content, and may potentially be more at risk to adverse consequences of SH use.

6.6. Overview of Studies 2 and 3

The previous sections have provided an overview of the existing literature around ED/SH content online, including identifying gaps within the current body of knowledge and explaining how these are addressed by studies two and three of this thesis. The following section provides specific details of the research questions asked, the methodological approach applied, and the rationale for choosing Twitter and Tumblr as the social media platforms for investigation.

The two studies address two main research questions in relation to ED and SH behaviour respectively:

1. What type(s) of ED/SH-related content is being shared on Twitter and Tumblr?

   This includes identifying what type of ED/SH content is being shared overall, and also identifying whether there are any differences in the type of content shared on each platform, for example is more positive content (e.g., pro-recovery) and/or negative content (e.g., pro-ana/pro-SH) being shared on one platform compared to the other?

2. Who is sharing pro-ana/pro-SH, anti-ana/anti-SH and pro-recovery content?

   This includes identifying if there are user differences (e.g., age, gender, anonymity) in the type of content shared, for example whether there are differences in the type of users who share pro-ana/pro-SH content, anti-ana/anti-SH and pro-recovery content.

In order to adequately address these questions, the studies adopted a mixed methods approach. Data collection involved capturing a large sample of ED/SH-related posts and blogs from both platforms via the Twitter and Tumblr Firehoses (refer to section 7.1 for further details on the sampling methodology). Due to a lack of current knowledge in this area, the data was first qualitatively analysed using an inductive, thematic approach. Thematic analysis is a qualitative method that identifies the most salient themes (i.e., meanings) within the data (Daly, Kellehear, & Gilksman, 1997). This approach has the ability to identify manifest and latent motivations that drive behaviour (Joffe, 2011); therefore helping to achieve the goal of understanding ED and SH communities from the perspective of the users (Vaismoradi, Turunen, & Bondas, 2013). This approach also ensures that the researchers impose no a-priori codes or hypotheses, therefore allowing

the themes to emerge from the data itself. This provided rich insight into the type of ED/SH content being shared on these platforms and subsequently guided the development of a coding scheme for the quantitative analysis.

The quantitative analysis allowed statistical testing for differences between the platforms in relation to the type of content shared. Analysis across the platforms also allowed the identification of user differences in the type of content shared, e.g., between users sharing negative content such as pro-ana/pro-SH material and those sharing positive content such as pro-recovery material. The methodology is discussed in more detail within Chapter 7. In the meantime the following section explains the rationale for investigating the Twitter and Tumblr platforms.

6.6.1. Why Twitter and Tumblr?

As previously discussed there is a lack of research into the type of ED/SH content shared on social media (section 6.5). Social media content from Twitter and Tumblr was chosen for several reasons. First, as both platforms have been identified in the media as having links to extreme communities (e.g., "Becoming what you don't eat" [Twitter], The Daily Iowan, 26th June 2014, "Girl posted SH photos online before train jump" [Tumblr], BBC News, 14th January 2014). Second, both platforms have a largely public nature, i.e., the majority of users have a publicly accessible profile unlike some other social media platforms where users regularly have privacy settings preventing public access to their profiles, e.g., Facebook (Madden et al., 2013; Marwick & boyd, 2010; Moore, 2009). Third, the public nature of the platforms' content means that Twitter and Tumblr are highly suitable for data collection and analysis and represent the ideal environment in which to research the transmission of ED/SH information between users (for discussion around ethical considerations please refer to sections 7.1-7.2). Lastly, whilst Twitter and Tumblr are both blogging platforms and therefore provide comparable content, they differ in their functionality and the environment they create for users therefore allowing between-platform comparisons to investigate whether the environment that is provided by the social media platform may impact upon the type of content shared by users. As Tumblr has been linked to severe self-injury and fatalities, including the aforementioned suicide of Tallulah Wilson (section 6.3), it is important to investigate whether there is something about this platform that may potentially have a more negative impact than other social media platforms, for example through greater sharing of negative content.

Launched in 2006, Twitter is one of the most popular social media platforms, with 288 million regular users and 500 million messages sent via the platform every day ("Twitter: About the Company," 2015). Twitter is designed to act as a microblog service; users can

post frequent updates but each update is limited to 140 characters. Although mainly text based, users can also include an image, video or link in their messages. Users can choose to 'follow' other users - this means that they will see other users' messages (i.e., tweets) in their 'stream', i.e., the first page that users see when they log into their account (Marwick & boyd, 2010). Users can also search for keywords of interest. Users have the option to 'retweet' other users posts, which allows quick and easy sharing of information with little effort on behalf of the user. This 'retweeting' culture in addition to the platform's basis upon 'follower networks' contributes to Twitter's impressive reach of communication in disseminating information to the masses (Scanfeld, Scanfeld, & Larson, 2010).

Founded in 2007, Tumblr is another popular social media platform that is currently ranked number 38 globally, and number 18 within the US, on the Alexa website traffic index (www.alexa.com, accessed 17th May 2014). Tumblr allows users to share multimedia and other content to a short-form weblog, which can take the form of text, images, quotes, links, videos or music. Tumblr is arguably more visual than Twitter and allows a greater degree of customisation. Like Twitter, Tumblr also allows users to 'follow' other users' blogs and posts and these will then be displayed in the user's stream (Morey et al., 2011). A reblogging option, similar to the retweeting option on Twitter, allows easy sharing of information from one user's blog to another. As of April 2015, Tumblr hosts 234 million blogs ("Tumblr: About Us," 2015).

The key differences between the platforms will be explained in more detail in the following sections, including explanation of the relevance of such differences to the potential findings of studies four and five:

6.6.1.1. 'Private-public' or 'Open-public'

The platforms differ in their 'perceived public'. Tumblr tends to be regarded as a more private network by younger users as their parents generally do not use the site, unlike some of the more mainstream social media sites such as Facebook and Twitter (Karl & Peluchette, 2011). Therefore adolescents in particular may regard Tumblr as a more 'private-public' rather than the very 'open-public' of Twitter. This has been described as "less about public vs. private [i.e., privacy settings] and more about whether you are findable and identifiable by people who actually know you in real life" (Rifkin, 2013, para. 8). In contrast, Twitter users appear to be very aware that it is an openly public domain and studies suggest that some users do not feel it is an appropriate platform for sharing sensitive information, for example a participant in a study by Marwick and boyd (2010) is quoted as saying:

> "I'm very conscious that Twitter is public. I wouldn't tweet anything I didn't want my mother/employer/professor to see" (p. 12).

Interestingly, Marwick and boyd describe how many participants self-censored their Twitter posts, but would often discuss sensitive topics on blogs, Facebook and LiveJournal (another weblogging platform similar to Tumblr).

While it is possible to have anonymity on Twitter, the predominant norm is for the user's identity to be grounded within reality. Whereas, Tumblr lends itself more readily to more anonymous use and includes search functions focused more upon finding people who share a similar interest rather than connecting with people you already know in the offline world. Tumblr also offers an anonymous 'ask me a question' feature. It is not known what affect this increased feeling of privacy and anonymity may have for the ED/SH community user; however other anonymous social media sites, particularly Ask.fm, have been linked – by the mass media - to numerous suicides including the death of 14 year old Matthew Homyk ("Ask.fm: The Antisocial Network", Dickey, 2014), 14 year old Izzy Dix ("Schoolgirl who killed herself was bullied 'for being bright', inquest hears", Morris, 2013) and 13 year old Erin Pugsley who's 15 year old sister also committed suicide following Erin's death ("Tragic Erin named Ask.fm in suicide note, claims mother", Harkin, 2013). Speculatively suggesting that greater anonymity may be linked to increase negative content and/or consequences.

Based upon these differences between the platforms, it is expected that Tumblr users may have a tendency to provide less identifiable information, e.g., name, photograph, location, and may share more sensitive or extreme content (e.g., pro-ana/SH) due to greater anonymity and/or privacy social constraints on the type of content shared. The consequences of the 'public-public' versus the 'private-public' may go beyond users simply wishing to avoid upsetting family or employers. There is evidence to suggest that the online environment could be linked to users' self-identity and the degree of perceived privacy may have an impact upon this – as discussed further in the following section.

6.6.1.2. An expression of self: The portrayal of the self-concept on Tumblr versus the context collapse of Twitter.

We present ourselves differently according to the context we are in, e.g., who we are talking to and where the conversation is taking place. Social contexts differ in their perceived norms and expectations, for example we will act differently at a job interview compared to on a night out with friends or on a date (Marwick & boyd, 2010). Goffman (1959; 1999) describes self-identity as a continual performance and describes people as actors who tailor self-presentation based upon the context in which they find themselves

and their perceived audience. Individuals engage in 'impression management' by habitually monitoring how others respond to them when presenting themselves. Therefore normally individuals will have multiple identities or 'selves'.

Before Web 2.0 the internet was regarded as distinct and disconnected from the offline world - an anonymous world providing individuals with the opportunity to play with identities and different 'selves' (Morey et al., 2011). However, the rise of social media reconnected the online identity to the offline self. Largely spurred by the arrival of Facebook, digitally-mediated self-presentation and communication shifted from anonymous or pseudonymous (Wittkower, 2014) to an online identity more grounded within reality. However this also brought new barriers to overcome through the 'erosion of the boundaries between the public and the private' (Morey et al., 2011). The nature of social media flattens multiple contexts and distinct audiences into one (Albrechtslund & Albrechtslund, 2014); something referred to as 'context collapse' (Marwick & boyd, 2010). Now users must find a way to present a unified self – a consolidated identity - across many audiences which would traditionally be distinct in the offline world, e.g., work/friends, online/offline, formal/casual (Albrechtslund & Albrechtslund, 2014; Rainie & Wellman, 2012). This is nicely summarised by Wittkower (2014):

> The strikingly voluntary construction of self-narrative emblematic of earlier online identity has been re-attached to less voluntary and involuntary aspects of off-line life, collapsing the wild and limitless freedom of identity-construction partially back into the familiar and everyday dramaturgical self-construction of multiple self-presentations to various constituent communities – but now with an architecturally-imposed need to reconcile these selves with one another in a way not required by the architectures of off-line life, due to the promiscuous intermixing of communities in the information feeds of our Facebooked sociality. (p. 2).

Although privacy settings can provide a possible method of limiting the content shared with particular audiences, these are rarely feasible or effective and often cumbersome and unnatural in nature. In the offline world we can easily adapt our behaviour to various situations as they arise, whereas the online world requires us to make a priori judgments on who to include within each future interaction – something that users do not always have the time, technical know-how or foresight to be able to apply (Wittkower, 2014). Research suggests that having multiple, fragmented identities can be more natural, beneficial and liberating than having one forced, unified identity due to context collapse which may restrict an individual's behaviour and self-expression (Albrechtslund & Albrechtslund, 2014; Marwick & boyd, 2010).

As aforementioned in section 6.6.1.1 ('Private-public' or 'Open-public'), Twitter is a very open platform and the user may not have a clear idea of the identity of their audiences; they are effectively communicating to the open unknown (Marwick & boyd, 2010). This combined with the fact that the platform is more grounded within reality, may make users more reluctant to share sensitive information or content that may not fit the norms and expectations of certain audiences such as their offline friends, family or employers. Marwick and boyd describe how "the tension between revealing and concealing usually errs on the side of concealing on Twitter" (p. 11) - this is due to context collapse often resulting in the audience being imagined at the level of its most sensitive members, e.g., parents, partners and employers. Many believe that this tying of the online self to multiple offline selves no longer represents but instead restricts the offline self (Wittkower, 2014, p. 17). Marwick and boyd found that users regard Twitter as a place where the strictest standards apply. This may make Twitter users less likely to express extreme or controversial opinions or topics, for example those relating to ED/SH behaviours. In comparison, Tumblr's more 'private-public' which is less influenced by context collapse (and perhaps also provides greater perceived freedom from social norms) may allow users to feel that they can express themselves more freely in the content that they share. It is therefore expected that Tumblr users may share more ED/SH content and/or more extreme, controversial and/or graphic content than Twitter users.

6.6.1.3. Textual vs. Visual

Perhaps the most striking example of how Tumblr differs from Twitter is the formers stronger emphasis upon the visual. In stark contrast to the very clinical, textual interface of Twitter (Marwick and boyd (2010), Tumblr focuses heavily upon visual elements, allows for a much greater degree of user customisation and facilitates the easier uploading and creation of multimedia content (Morey et al., 2011).

Social media has been attributed to bringing together intimacy and exhibitionism through photo sharing, with Jurgenson (2011) describing online photographs as forming part of a personal archive driven by a "nostalgia for the present". Photos can be seen as providing meaning and identity (Albrechtslund & Albrechtslund, 2014). Therefore this may be another way in which Tumblr may be more connected to the user's self-identity. In effect, unlike Twitter where feeds all look similar, Tumblr allows each user to create their own personal space within their page. Carrington (2009) interviewed bloggers and found that blogs featuring a range of rich multimedia allow more advanced means of self-expression. Users may see this as a reflection of their personality and as such may feel that Tumblr is more strongly linked to their self-concept and identity. Callaghan (2013) describes Tumblr as "incorporate[ing] the intensively interactive but highly individualised elements of social

media associated with Twitter with a highly visual format". Again this may result in Tumblr being used more for self-expression compared to Twitter, resulting in more sensitive/intimate, detailed and/or emotive content on Tumblr as the multimedia basis of the platform lends itself more readily to the expression of such topics. Again suggesting that more extreme, controversial and/or graphic content may be found on Tumblr.

Bearing in mind this greater visual (and sometimes audio) content of Tumblr, it is perhaps easier to understand why viewers, such as Tallulah Wilson's mum, may feel inclined to describe Tumblr users as being embroiled in a "toxic digital world" ("Internet safety plea over death of Tallulah Wilson", Davey, 2014b). Leading to concerns that Tumblr may provide a more immersive environment compared to the very neutral feel of Twitter, and may also make it easier for users to see triggering ED/SH content.

Furthermore Tumblr's origin as a largely photography/art-based website and the focus upon the visual may lend itself to romanticising these behaviours. The mass media often accuse social media of fuelling a glorified notion of SH, ED, isolation and depression as 'romantically tragic'. A recent headline reads "Social Media Is Redefining 'Depression': Online communities like […] Tumblr are perpetuating ideas of beautiful suffering" (Bine, 2013). If glorification of these behaviours is greater on Tumblr than it would be expected that more pro-ana/pro-SH content would be found on this platform.

6.6.1.4. Characteristics of the user base

It is possible that differences in the nature of ED/SH communities across the platforms are also influenced by differences in the user base rather than, or in addition to, the influence of the platform itself. For example study one (phase one) found that Tumblr users are younger than Twitter users (section 3.2.3). It has previously been suggested that Tumblr has one of the youngest user demographics of any of the social media platforms with 39% of users being between 16-24 years of age. In comparison Twitters has 28% in this age range ("Global Web Index Social Report," 2014). This raises concerns that the younger user demographic may mean that Tumblr is well positioned for use by those who engage in ED/SH behaviour or who may be most influenced by this content (Morey et al., 2011). Perhaps younger users are more susceptible to social influence, or they are at a period in their development when they are trying to establish their self-concept or experiencing emotional conflict, which may make them more prone to exhibit extreme behaviour and/or increase their vulnerability to the effects of online ED/SH content. Research suggests that there may be a "window of vulnerability" for the development of ED/SH behaviour when adolescents are in their mid-teens and often struggling with emotional control (Moran et al., 2012; Patton et al., 2007).

It is also possible that there could be gender differences in platform use. As mentioned early in this chapter, research suggests that females are more likely to display ED/SH behaviour; therefore a larger female user base may increase the percentage of this material within the specific social media platform. Therefore, it is expected that more females will be present on both platforms however due to Tumblr lending itself more readily to emotional and self-expression (and following the findings from the first phase of study one that females use social media more for social/emotional reasons) the percentage of females is predicted to be higher on Tumblr than Twitter.

6.7. Summary

Social media content relating to ED and SH has grabbed the attention of the press, government and general population due to links with negative health-behaviour and associated fatalities. Despite a wide call for action, there is a lack of research to help us to understand what content users are sharing on these sites. Further insight into the type of content shared and identification of any platform and/or user differences could enable us to identify what function(s) social media may serve for users communicating about ED/SH. Without this knowledge we run the risk of applying ineffective, or worse detrimental, interventions. For example, if users regard the ED/SH community as a form of social support and/or inclusion, a way to relieve emotional distress, or a platform through which to share and/or receive positive material such as tips for recovery, then it is possible that removing access without any regard for the impact or the loss of this network could have a disastrous effect upon users wellbeing.

Bearing in mind the severity of the behaviours involved, it is vital that research is dedicated to filling the gaps in our knowledge and providing the basis for the future design of interventions, the guidance of policy and a greater public awareness of the issue in hand. Studies four and five aim to fill these gaps. The mixed methods approach and broader scope of the research (e.g., not restricting to *pro-* content and incorporating two of the largest social media platforms) will provide a fuller, richer portrayal of online ED/SH content than has previously been researched. Statistical testing of differences between social media platforms will provide new insight into how content shared may, or may not, vary depending upon the platform involved; and the investigation of user differences will provide insight into who is sharing ED/SH content online and allow inferences to be made regarding the role social media plays in ED/SH communication.

The following chapter discusses the challenges faced in collecting and analysing data from the Twitter and Tumblr platforms and discusses the methodology used in studies four and five in more detail.

7. The challenges of collecting and analysing Twitter and Tumblr data: Data collection and analysis methodology for studies 2 and 3

Working with big data (Mayer-Schönberger & Cukier, 2013), such as the Twitter and Tumblr data used for the following two studies, brings with it many challenges. The following chapter will start by explaining how these challenges were overcome to allow successful data collection and will finish by discussing the methodological approach adopted for the data analysis.

7.1. Data collection

For ethical reasons and in keeping with the British Psychological Societies guidelines on internet research (BPS, 2013) only publically accessible data was collected from the Twitter and Tumblr platforms, i.e., no data was collected from profiles that were private at the time of data collection. The use of public data was considered justified by the high importance of the topics under investigation and their links to behaviour that can result in physical harm, poor mental health and fatalities (ethical issues were also addressed at the data analysis stage, refer to section 7.2).

The following sections discuss the various challenges and choices encountered during preparation for, and running of, the data collection. This includes: how to gain access to the data, choosing between the use of live or historical data collection, selecting the search terms (i.e., keywords), running pilot searches (and the amendments that followed), choosing the timeframe for data collection (including how to manage the collection of 'big data'), and how the data was qualitatively and quantitatively analysed.

7.1.1. Gaining access to the data: Public API vs. full Firehose access

There were two main options for accessing the Twitter and Tumblr data: access via the public application-programming interface (API) or via full Firehose access often through a private provider. An API is a programming language and set of standards for accessing a web-based software application or tool. The API allows two different applications to communicate with each other. Twitter and Tumblr released their APIs to the public so that other software developers can design products that are powered by their services. It is common for social media platforms to release their public APIs for this reason. However, public APIs often have restrictions and limitations on the data that they can provide, for example Twitter's public streaming API is restricted to 1% of tweets. When a search is run using the public API, Twitter will collect all data that matches the given

search parameters up to the point where the number of tweets surpasses 1% of all tweets on Twitter. Once the data has exceeded the 1% point the tweets returned from the remaining percentage will be sampled. It is not known what methods Twitter uses for this sampling (Morstatter, Ave, & Carley, 2013) and this has led to concerns that the data provided may be skewed and unable to be used as a representative sample; a concern which has been supported by recent research (González-Bailón, Wang, Rivero, Borge-Holthoefer, & Moreno, 2014; Morstatter et al., 2013).

Therefore the public API was replaced in favour of accessing data through the full Firehose. The Firehose provides full, unlimited access to the complete database of publicly available data on the platforms, and this is often accessed via a third party provider. For example Twitter and Tumblr provide access to the Firehose through GNIP (www.gnip.com) and Datasift (www.datasift.com). Unfortunately Firehose access is often costly, however for the current research it was decided that the risks of collecting a skewed sample deemed the public API inappropriate and therefore Firehose access to the Twitter and Tumblr data would be required.

7.1.2. Choosing between the live or historical data stream

Having established that full access to all Tweets and Tumblogs was required, the next stage was to choose between live or historical database access. It is often easier to gain access to the live Firehose stream and record the data in real time than it is to gain access to a historical database. Using live data is also considerably less expensive than requesting historical data through websites such as GNIP or Datasift. Only a limited amount of companies have access to the full Firehose of data and even less have access to the historical database. Requests to access historical data can be met with quotes for thousands of pounds. However, accessing the live Firehose can be arranged for a much smaller fee through websites such as DiscoverText.com which provides GNIP Firehose access on a pay-as-you go basis.

Due to the heavy workload involved (and minimum room for error due to data costs and time constraints) two researchers were involved in the collection of the data for each study - with one concentrating on the collection of Twitter data and one on the collection of Tumblr data. Live data was used for the majority of data collection in the following studies; the only exception to this was the collection of Twitter data for study two. Due to practical reasons it was not possible to schedule simultaneous data collection between the two researchers for study two. Therefore in order to ensure that both data samples were collected from the same time period, historical rather than live data collection was used for the study two Twitter data. This historical data was collected using Topsy

(www.topsy.com) – a search engine for past tweets. This allowed the researcher to collect the data on another day but still gather a sample from the same timeframe as the Tumblr data. The methods of data collection are summarised in Table 7.1.

Table 7.1. Methods of data collection for studies two and three

	Platform	Method of data collection	Historical or live collection	Data collection conducted in collaboration with:
Study 2 (ED)	Twitter	Topsy	Historical	Library of Congress, Washington D.C., USA
	Tumblr	DiscoverText	Live	Collected by the principal researcher
Study 3 (SH)	Twitter	Datasift	Live	Computer Science Department, Newcastle University, UK
	Tumblr	DiscoverText	Live	Collected by the principal researcher

Although the Twitter data collection was achieved using different sources for studies two and three (Topsy and Datasift respectively), both sources use the full Firehose of Twitter data and used the same keywords and parameters to gather the data. Therefore the methods do not differ in the data returned by the collection - as should be expected as the data is capturing the full, unedited stream of Tweets. This expectation was confirmed by running pilot data collections between the two sources. The results of the pilot data did not differ according to the method of access used.

7.1.3. Choosing the search keywords

As aforementioned, the same search keywords were used across both platforms, i.e., the same ED terms were searched on both Twitter and Tumblr for study two, and the same SH terms were searched on Twitter and Tumblr for study three.

When working with a big data set choosing the correct search terms is more important than ever. A mistake in this area could result in a researcher overlooking relevant data, collecting a skewed sample or simply capturing a vast amount of irrelevant content (and accruing the associated costs). Social media is rapidly changing and new keywords and hashtags (a word or phrase preceded by a hash sign [#] used on social media sites such as Twitter to identify messages on a specific topic) appear every day, therefore choosing the most relevant search terms can seem a daunting task. For the purpose of the following two studies, the website www.hashtagify.me was used to identify the most commonly used hashtags relating to ED/SH. Hashtagify.me is a Twitter hashtags search engine that calculates the popularity of hashtags and provides the top 10 terms connected to the

initial search word. For example, entering the term ‘anorexia’ returns the results shown in Figure 7.1.

Figure 7.1. Hashtagify.me results for search term ‘anorexia’, revealing the ten most commonly associated hashtags found in tweets containing the search term (Retrieved 7th May 2015).

This is an excellent starting point for exploring what terms can be used to find data on a particular topic. Although hashtagify.me is a hashtag and Twitter specific search engine, it can still be useful when trying to identify search terms in general – at least in the initial planning stages. In this instance eight initial search terms were used: anorexia, ED, proana (and pro-ana), pro-ed (and proed) and self-harm (and selfharm). Additional searches were then conducted, using each of the words from the results in turn. For example, as shown in Figure 7.1, the results for the initial search term ‘anorexia’ returned the words: diet, bulimia, thinspiration, ed, ED, thinspo, ana, proed, proana and weightloss – therefore ten separate searches were conducted using each of these terms in turn. Using the list of terms gathered using this technique, the researcher then manually searched for each of these terms on both the Twitter and Tumblr platforms and noted any other ED/SH-specific terms which had not be captured using the hashtagify.me search engine. All new terms were added to the list of possible search terms for the data collection.

At the end of both stages of the search process, the researcher had a total list of 55 ED-specific search terms and 20 SH-specific search terms to potentially use for the data collection (Appendix C). In order to narrow this down to the most relevant search terms,

each of the terms were entered into Topsy, which provided an estimate of the daily number of tweets containing that term. The results from the previous month were used (rather than using the 'last 24 hours' option, in order to account for any variability in a particular day). Any terms showing a frequency of less than 100 tweets per fortnight were excluded from the list of terms for the final data collection. The final list of search terms used for data collection is shown in Table 7.2.

7.1.4. Running pilot searches

Having identified the search terms, the next stage was to run pilot searches to check the quality and quantity of the data being collected by the identified search terms. Search trials and amendments were run over a total period of 40-60 hours. During this time the following observations and amendments were made:

7.1.4.1. Amending the search terms and syntax to suit the platforms

Checking that the required data has been captured is not always easy especially when running a search for multiple terms involving big data from across two different platforms. Different software and websites use slightly different search commands therefore it is vital that trial searches are conducted. Although the search language associated with each platform's Firehose was studied prior to running any searches (Twitter: https://dev.Twitter.com/docs/api and Tumblr: www.Tumblr.com/docs/en/api/v2), running the synchronous pilot searches was still a very valuable way to check the search syntax. For example, when running the searches for the Tumblr data, it was not clear whether searching for keyword proana would also capture #proana. In order to determine this, two test searches were ran synchronously – search A using the term proana and search B using the term #proana. If search A was identical to search B this would tell us that the keyword proana was indeed capturing #proana too. We discovered that for the Twitter data accessed via Topsy the hashtagged and non-hashtagged words needed to be entered separately. However this was not the case for the data accessed via Datasift - illustrating the need to fully trial each setup before running the final data collection.

The same also applied to establishing which operators needed to be included between the search words, e.g., whether AND and/or OR needed to be entered in the search string and what was implied if the string was simply entered without any conjoining words, e.g., whether the search string "proana anorexia bulimia self-harm" will search for "proana AND anorexia AND bulimia AND self-harm" or whether it will search for "proana OR anorexia OR bulimia OR self-harm", the former would be very specific as it would require all four words to be present within a tweet/blog for that item to be captured by the data

collection, and therefore the latter is what was required for studies four and five, i.e., just the presence of at least one of the search terms would result in the tweet/tumblog being captured by the data collection. Similarly, the pilot searches identified whether phrases needed to be searched within quotations to indicate that they were to be searched as part of a phrase, e.g., "eating disorder" to exclude the results showing items which just included the individual terms 'eating' *or* 'disorder', or the words separately within the same item, e.g., "when the puppies were not playing or *eating*, they were causing chaos and *disorder*". The searches were also designed to return only the exact search terms, i.e., no wildcard searching was used in order to ensure that the data from each platform was as comparable as possible.

The pilot searches also identified that a lot of noise was being captured by many of the search terms. For example there was a lot of spam and pornographic messages particularly in relation to the pro-ana community, which is often a target for the adult sex market (Bond, 2012). In order to address this, common words within these spam messages were identified and excluded from the search. This greatly reduced the amount of noise when the pilot sample was rerun. Table 7.2 shows the final list of search terms included and excluded in the final data collection.

Table 7.2. Search terms and exclusions for Studies 2 and 3

Study	Included search terms	Excluded search terms
Study 2(ED)	proana / #proana / pro-ana / pro ana	amzn / amazon
	anorexia / #anorexia	#porn
	anorexic / #anorexic	#xxx
	#promia	#sex / #sexual
	bulimia / #bulimia	#thinebook
	bulimic	30 days to thin
	#eatingdisorder / eating disorder	skinny dip / skinny dipping
	#edproblems	#adult
	ednos / #ednos	shop now / buy now
	thinspiration / #thinspiration	
	thinspo / #thinspo	
Study 3 (SH)	selfharm / #selfharm	amzn / amazon
	self harm / self-harm	#porn / #xxx
	selfinjury / #selfinjury	#sex / #sexual
	self injury / self-injury	#thinebook
	selfharming / #selfharming	#adult
	self harming / self-harming	shop now / buy now

7.1.4.2. Choosing the timeframe

Running the pilot searches also provided valuable insight into the amount of data that would be captured within a specific duration of time. Topsy was used to give an approximate indication of maximum Twitter sample sizes, however this is often not accurate due to the website search form generally relying upon the researcher searching per individual keyword; this can skew the numbers as multiple keywords can appear within the same tweet – therefore the number on Topsy will be inflated as tweets will be counted more than once if they feature in more than one of the search terms. This is therefore not an effective way to gauge sample size unless a dedicated search string can be used which includes all the search terms and exclusions, and the API is not limited by the amount of terms that can be ran at any one time (e.g., only allowing up to ten terms to be included in each search). Topsy is also restricted to Twitter data, and to the best of the researcher's knowledge, there is not a similar tool for use with Tumblr - making estimates of sample size almost impossible without running initial pilot searches on the database.

By running a pilot search over a short space of time, it was possible to estimate the duration required for the final data collection. Studies four and five were initially designed for data collection to be conducted over a period of several days. However following the initial pilot searches it was discovered that the quantity of data would be too vast. This left two possible options: 1) Collecting data over several days and then taking a random subsample of this to use in the actual analysis, or 2) Reducing the time frame so that the quantity of data was more manageable (and more cost effective). In this instance the decision was made to reduce the timescale to a 24-hour period in order to provide an insight into 'a day in the life' of ED and SH communities on Twitter and Tumblr.

Whilst Twitter data was collected for the full 24 hours, due to the much greater volume of Tumblr data, the final Tumblr searches collected data for approximately 1 minute at every 4-hour interval across the 24-hour period. This ensured that the sample was still representative of tumblogs posted across the 24 hour period but limited the amount of data to be collected, stored, exported and analysed. This also limited the cost of the data collection, which was run on a 'pay as you go' basis with costs per data item collected.

7.1.5. Choosing the date for final data collection and collecting simultaneous samples

Having completed the pilot searches and refined the search parameters the next stage was to choose the date for the final data collection. The date chosen could have a dramatic effect upon the results if it coincided with any major events. Therefore in order to control for this as much as possible and aiming to gather data from a day representative of a

'normal, everyday' situation, dates within two days of a recognised holiday were excluded particularly as religious holidays will often impact upon eating behaviour. A random generator was then used to select a date that matched this criterion within the upcoming months (www.random.org/calendar-dates/). The date chosen was 12th June 2014.

As both of the following studies involved comparing two social media platforms, two separate samples were collected, one from Twitter and one from Tumblr. In order to ensure that the data from each platform was as comparable as possible, the samples needed to be collected on the same day. Therefore a specific date and time was allocated for the collection, in this instance 00:00 – 23:59 GMT+1 on the 12th June 2014. As some of the data collection was being run live (refer to section 7.1.2) and by researchers within the USA and the UK, it was vital that the time zone was also clearly specified. This also enabled the historic data collection for study three (section 7.1.2) to be retrospectively gathered from the same time period.

7.2. Data analysis

The previous section discussed the methodology for data collection for studies four and five, this section moves on to discuss the methodology for data analysis including how the data was analysed in accordance to BPS guidelines for conducting online research (BPS, 2013) and the qualitative and quantitative approaches that were applied to the data.

During data analysis focus was placed upon identifying generalised themes rather than identifying individual posts or users. In order to preserve users' rights to anonymity and confidentiality (as required by BPS guidelines) no user IDs, names or profile photos are included in the results. Also any tweets and tumblogs mentioned in the results are paraphrased to prevent internet searches of the text leading to possible identification of the users. All paraphrasing was checked by two researchers to ensure that the content stayed true to the original messages.

7.2.1. Qualitative analysis approach

The first stage of the analysis was the qualitative analysis during which an inductive thematic analysis approach was applied (refer to section 6.6 for rationale for this approach). This stage of the analysis was conducted using MaxQDA - a specialised software program for analysing data using qualitative techniques. In order to avoid coding in chronological time order and therefore potentially biasing the data, all items (i.e., tweets/tumblogs) were assigned a random number and sampled consecutively according to the new randomised order. In order to code the data, the researcher repeatedly

examined the tweets/tumblogs to get an overall feel of the 'story' being told. This was followed by the creation of annotations, also known as free nodes, summarising the contents of each tweet/blog post. These annotations formed the initial stage of coding. At the next stage, key themes were labelled using index nodes to categorise the free nodes into recognisable categories. For example some tweets/ blogs referred to a need for support therefore during the initial development of the coding scheme there was a category, i.e., index node, labelled 'support' (this was subsequently broken down further into 'requesting support' and 'offering support'). During analysis the researcher continued to move between the transcripts and the codes, constantly reviewing and revising the themes as appropriate.

In addition to the initial random sampling, theoretical sampling was used to sample more male participants. As the majority of users were female, it was important to gather data from both genders to provide a more comprehensive view of the behaviours under investigation and to ensure that the themes emerging from the data was not just applicable to female users. Analysis continued until the point of saturation, i.e., when the analysis of further data ceased to provide any new information. Once saturation was reached and the key themes were identified, the analysis was ready to progress to the next stage, beginning with the formation of a reliable coding scheme as discussed in the following section. The emerging coding scheme was discussed and reviewed with another researcher throughout the process. The findings from the thematic analysis are discussed in section 8.1 (ED; study two) and section 9.1 (SH; study three).

7.2.2. Quantitative analysis approach

Using the themes identified by the qualitative analysis, a coding scheme was developed by creating quantifiable, mutually exclusive definitions of the main themes, i.e., creating clear coding criteria for each theme which allowed the tweets/blogs to be reliably coded. This coding scheme was piloted and discussed by two raters using a randomly selected subsample of the data. Once a coding scheme was established this was tested for inter-rater reliability on another randomly selected subsample of tweets and blogs using Kappa's alpha (refer to sections 8.2 and 9.2 for further details). The coding scheme was refined and repeatedly tested until all codes had a Kappa value greater than .7 (a Kappa value >.6 is commonly regarded as acceptable). The coding scheme was then applied to a new random sample of data for the final quantitative analysis. Please refer to sections 8.3.1 and 9.3.1 for sample size details for studies four and five respectively.

Having described the methodology used across both studies, the following two chapters report the findings from each study.

8. Study 2: Communication about eating disorders on Twitter and Tumblr

As aforementioned (section 6.6) the findings reported in this chapter aim to identify the types of ED related content shared on social media. The analysis includes between platform comparisons of Twitter and Tumblr and identification of any user differences in the type of ED content shared. For full details of the methodology used in this study, please refer back to Chapter 6.

8.1. Qualitative analysis

This section introduces and describes the themes identified by the thematic analysis. The sample consisted of 190 items (94 Tweets and 96 Tumblogs). Of those items were gender could be identified, 56 were from female users (15 from Twitter, 41 from Tumblr) and 19 were from male users (16 from Twitter, 3 from Tumblr). In the interests of preserving user anonymity, all quotes have been paraphrased.

8.1.1. Pro-ana content and 'thinspiration'

It was noted that some of the posts across both social media platforms expressed a pro-ana (pro-anorexia) mentality. This included ED-related material that depicted a desire to be thinner without any indication that recovery was desired and no recognition that disordered eating was 'a problem'. For the purpose of this research and in keeping with the context in which the term is commonly used, 'pro-ana' refers to all pro-ana content including that which encourages bulimic or other disordered eating behaviours and is not necessarily specifically about anorexia nervosa.

Some users who made pro-ana posts appeared to judge themselves as successful or unsuccessful depending upon how little they had eaten and/or how long they had fasted. There appeared to be an emphasis upon having self-control over the desire to eat and being able to overcome this desire was regarded as an achievement worthy of admiration. For example one female user attached the hashtag #ThinIsSuccess to her blog post and included the message that "laxatives are a girl's best friend". Pro-ana users also referred to learning to enjoy the feeling of being hungry and would refer to signs of hunger as indicators of success, for example one post described how "the sound of a stomach rumbling was equivalent to the sound of applause".

Some of the extreme pro-ana material analysed portrayed ED as a lifestyle choice rather than a disorder to be treated. Pro-ana users would also share 'motivational' material, for

example images of tape measures around waists or weighing scales and quotes such as "don't eat", "keep going, nothing tastes as good as skinny feels". Many of these 'motivational' messages featured images of very thin women. These images are commonly referred to amongst users and the general population as 'thinspiration' or 'thinspo' (refer to section 6.5.1), i.e., photographs and images designed to 'inspire' viewers to lose weight. The thinspiration photos within the sample often depicted very slim women, many clearly below a healthy weight. The women in these images often had extremely protruding collarbones, hipbones and ribs and very pronounced 'thigh gaps'. The term 'thigh gap' is used to refer to a woman's thighs not touching when she stands with her feet together (see figure 8.1). One reoccurring quote was seen on numerous Tumblr blogs during the analysis: "feet together, thighs apart". A variation on the same theme was the bikini bridge (also shown in figure 8.1), which refers to the gap between the waistband of a woman's bikini bottoms and her stomach when the bikini rests across her protruding hipbones. Both thigh gap and bikini bridge were referred to as 'goals' within some of the pro-ana content. Many thinspiration images only showed parts of the body, for example a photo of someone's collarbones, or just the side of their waist. Accompanying these images were captions or comments such as "I really want her collarbones" or simply hashtags such as #collarbones, #ribs, #bones. One thinspiration image depicted a very underweight female with a caption stating that this is what pro-ana users are fighting for. The image was accompanied by several hashtags, amongst them were #bones #ribs and #sexy. Some thinspiration images were more severe than others, with the most extreme thinspiration sometimes being referred to as bonespiration or 'bonespo'. Interestingly no male thinspiration images were found during the analysis.

The use of pro-ana specific keywords such as #thinspiration, #thinspo, #proana, #bonespo and #thighgap make pro-ana material more easily identifiable and crucially, from the perspective of the users, easier to find through the platform search engines. During the qualitative analysis, thinspiration appeared to be one of the main features amongst pro-ana posts, the prevalence of which will be investigated further in the quantitative analysis.

Figure 8.1. Images of bikini bridge (left) and thigh gap (right). Google image search, 12th Jan 2015.

Some pro-ana users offered support to others, or requested support for themselves. For example, one user posted a message saying that they intend to fast for the next 24 hours and asked other users for encouragement and support. Another user posted a link to their thinspo-dedicated Snapchat account and asked other users to add him/her if they wanted to be sent daily thinspiration (Snapchat is a photo messaging application that allows users to take and share photos and videos to their friends. Users set a time limit for how long recipients can view the images/videos before they are automatically deleted from both devices). This user also offered to talk to other users and support and encourage them in their pro-ana behaviour. Another pro-ana user posted that he/she felt faint and asked for tips on how to get energy if they are not eating, they accompanied their post with several hashtags including #ana #thinspo #starvation and #tips. A third pro-ana user replied to someone's request for tips on combating hunger by suggesting that they look at some thinspo, drink water, distract themself by going for a walk or reading a book, or wait 20 minutes for the hunger to pass.

Some of the pro-ana posts did express negative emotions such as sadness and anger. Some users expressed extreme feelings of self-dissatisfaction with messages such as "When I look in the mirror I see nothing good, nothing attractive. I'm fat, I don't have perfect arms/collarbones/legs/lips/cheekbones etc." or messages about feelings of hopelessness or suicidal ideation, for example by posting that they don't think they can continue to live feeling like they do.

Confusion and frustration appeared in some users' posts, for example one user stated that she did not understand how her ED could make her feel "so strong" yet it is was actually making her weak. Another user expressed her anger and frustration by venting her post in capitals "FOOD MAKES ME ANGRY, SO ANGRY. I F*CKING HATE BEING OVERWEIGHT I HATE HAVING AN ED". Users also expressed frustration over binging behaviour with one user posting that she "wants to die" because she had binged. This suggests that users may be using blogs as an outlet for expressing emotion. Social media may provide an environment where they feel free to air their views and feelings.

Some users had blogs which were dedicated to sharing pro-ana content, i.e., the user rarely, if ever, shared any other type of content whether ED-related or not. Some of these users used their blog as a diary to document what they ate and drank and how much they exercised. Their blogs sometimes including a list of goal weights (usually in the biography section), and users would cross off the amount of weight lost until they reached their goal weight. These lists would often include a series of stages from current weight through several goal weights (often labelled goal weight 1, goal weight 2 etc.) and then finally their ultimate goal weight (UGW). Some users posted regular 'progress' pictures of themselves (sometimes of just their body in order to preserve anonymity) to show others how much

weight they had lost so far. One user described her blog as somewhere to post everyday over the summer to help her stop binging and lose weight. She explained that she would be posting about what she eats, drinks, weighs and everything that relates to her and her "journey". She explained that she would also be sharing "body shots" (body photos of progress).

Many of the pro-ana blogs featured content relating to depression, suicidal ideation and/or SH. Many sufferers also mentioned that they suffered from other mental disorders. Generally, pro-ana blogs seemed to have a 'gloomier' feel than blogs that were not dedicated pro-ana blogs, particularly in relation to Tumblr where greater user customisation is possible. Many of the pro-ana posts and blogs were black and white, e.g., a lot of the thinspiration photos viewed during analysis were devoid of colour. The lack of colour and the more dismal environment provided by many of the pro-ana blogs may be used as a way to express users' feelings of negativity, hopelessness and/or depression.

Tumblr blogs also showed a wider range of media (again likely due to the higher degree of customisation on this platform), for example some of the dedicated pro-ana blogs automatically played atmospheric, sad or angsty music for the viewer. Images or visually represented quotes tended to dominate the screen and many of these images featured moving GIFS, i.e., short flipbook style videos that play automatically and on a continuous loop. Some of the pro-ana dedicated blogs featured repeating videos of SH, for example someone cutting their skin.

In comparison to Tumblr, Twitter seemed very clinical and had much less obvious customisation with all users displaying the same basic, clean theme. Although images were shared on Twitter, the Twitter feed on a user's profile was generally less immediately visual than on Tumblr - viewers are not immediately confronted with a screen of imagery. It is not yet possible to have automatically playing 'background music' on Twitter or to upload GIFS that automatically and repeatedly play, i.e., without the user clicking 'play'. The higher degree of customisation on Tumblr may lead to a more immersive environment, which may have the potential to increase the impact that the post and blog has upon viewers and/or may lead to this impression from others and/or the media (e.g., giving the impression of a "toxic digital world"; section 6.3). The quantitative analysis investigates whether there is any empirical evidence to suggest that Tumblr may contain more negative material than Tumblr.

Lastly, it was observed that some businesses were seeking to sell products online by marketing them as 'thinspiration', 'pro-ana' or methods to achieve a thigh gap, e.g., diet 'supplements' and websites aiming to sell fitness schedules and routines. This was found on Twitter rather than Tumblr and is likely to be due to the more public, broadcasting

nature of Twitter and its commercial user base (Geho, Smith, & Lewis, 2010). It is particularly worrying to see businesses using pro-ana specific terms to market products, not only is this targeting vulnerable individuals and potentially exacerbating their existing behaviour, but it is also potentially normalising the use and acceptance of these terms in the more general public.

8.1.2. Anti-ana and pro-recovery content

In addition to pro-ana content, there was evidence of a more positive element of the ED content shared across both platforms. This took two main forms: *anti*-pro ana (shortened here to anti-ana) and pro-recovery, both of which are discussed in more detail in the following section:

8.1.2.1. Anti-ana content: Challenging pro-ana

The analysis revealed that pro-ana content did not go unchallenged within the Twitter and Tumblr communities. There were tweets/tumblogs that expressed a clear, explicit resistance towards the pro-ana mentality. Termed here as 'anti-ana', this content explicitly challenged the sharing of pro-ana material and expressed concerns regarding the damage it can potentially cause to viewers, particularly vulnerable users such as those currently suffering from or recovering from an ED.

Anti-ana users were generally not against online discussion about EDs but they did not agree with any content that was *pro*-ana, i.e., that encouraged disordered eating and/or portrayed EDs as a lifestyle choice and not disorders that require help and treatment. For example, one user blamed the sharing of 'thinspiration' and pro-ana diets with fuelling her ED, whilst a second user stated that pro-ana users promoting EDs could "kill someone". Another user felt really strongly that pro-ana blogs should not be shared; he/she explained that they have a personal history of disordered eating and believe that pro-ana blogs can be triggering. They also mentioned that they have received messages from other users who attribute pro-ana blogs with worsening their existing ED or helping them to develop disordered eating habits. He/she clearly stated that although they disagree with any pro-ana material, they do support communication about EDs as they know how isolated ED sufferers can feel, and that they personally have made good friends through social media. Like the aforementioned user, some users who expressed an anti-ana attitude were previous or current ED sufferers themselves, however others appeared to just be users who believed that the pro-ana mentality should be challenged. Some of the anti-ana posts challenged the glorification of EDs, and this view was not always limited to ED but also the glorification of other mental disorders or negative health behaviours, for

example the portrayal of suicide, depression or SH as 'tragically beautiful' or 'trendy'. One anti-ana user challenged the need to have a thigh gap by stating that beauty does not depend upon whether someone has a thigh gap or not. Instead the user argued that being healthy is beautiful.

Some of the anti-ana users stated that they actively report pro-ana material to the social media platform, for example one user posted about pro-ana blogs explaining how "horrible it is" for younger users to see pro-ana content. They believe that it is easy to "stumble upon" pro-ana blogs without specifically searching for them and that this can "ruin lives". They mentioned how they report pro-ana blogs for this reason and that the pro-ana bloggers should not be annoyed if their blogs are deleted as it is against the platform's terms and conditions. A second user echoed these sentiments and stated that they only report blogs that actively give out "tips" on how to engage in disordered eating as he/she regarded this as "dangerous content".

Disagreements sometimes occurred when users shared pro-ana material but also stated that they did not support a pro-ana stance. For example one Tumblr user defended their sharing of pro-ana images by stating that they have an ED and their blog was for their own use and to express their "inner feelings and thoughts". They did not regard encouraging other users as one of the main aims of their blog. However this was met with an anti-ana reply from another user who stated that they also have an ED and he/she believes that there are more positive methods of coping that don't involve sharing photographs of severely underweight women or negative quotes. They highlighted the fact that pro-ana content is in violation of the platform guidelines and that they did not feel that the user was helping herself or others by posting this content and that she was still glorifying EDs regardless of whether she associated herself with the pro-ana label or not. This user also drew attention to the privacy controls that enable users to make their blogs private and viewable to only themselves if they wish to prevent spreading "the toxicity".

Anti-ana content appeared to be prevalent across both platforms, and in contrast to pro-ana (and also pro-recovery, section 8.1.2.2), anti-ana blogs appeared to be the most diverse in relation to the type of content that they shared on their blog. Anti-ana users did not tend to show any devotion to sharing ED related content, i.e., this was not something that they shared on a regular basis. Anti-ana material appears to be shared largely by general users who see the content shared by someone else and reshare it along with other content and/or causes that they feel are important. They do not appear to be using social media solely to combat or challenge pro-ana material. The quantitative analysis investigates this further.

8.1.2.2. Pro-recovery content: Sharing and inspiring recovery

There were also users sharing pro-recovery content on Twitter and Tumblr. Pro-recovery content is defined here as material that aims to encouraged recovery in the user themself and/or others with EDs. Some pro-recovery posts shared the users own recovery progress and struggles, for example one user wrote about how she now had a healthy body with no thigh gap or protruding hipbones however she was feeling nervous about going to the swimming pool with her friends as she thought she would still feel that her body was not "pretty enough" compared to her friends. She mentioned that her friends tell her she looks better now and that this makes her happy but she was still nervous about the trip to the pool. Another user shared a before and after photo of herself, the 'before' photo showed her a fortnight before she was admitted to hospital because of her ED. She recalled being sad and feeling isolated. She also remembered being too weak to get out of bed and always being cold. The 'after' photo showed her 6 months into her recovery. She described how she no longer had a thigh gap and was beginning to realise that there is more to life than being slim. She mentioned how she loves being able to go out and have fun without feeling like she is going to "pass out". She also loves not being preoccupied with calories so she can actually focus on other things that she enjoys. She finished by saying that she hopes recovery is possible for everyone and that although it may take a while to achieve it, "it is worth it".

Similar themes were echoed by another user who also shared her 'before and after' photos. She started by saying that others may simply see a girl who has gained weight, and may even prefer her 'before recovery' photo, however she explained that the photos depict a girl who has overcome a disorder and that this involved completely changed her way of life, the way she thinks about things and the way she feels about herself. She explained how she used to engage in extreme calorie restriction and how she felt like she was losing her sanity. This user then divulged that she feels "thinspo" influenced her behaviour, fuelling her self-hatred and making her highly self-critical. She blamed the promotion of thinspiration and restrictive and dangerous diets with fuelling EDs (therefore in addition to being pro-recovery, this user also demonstrates an anti pro-ana stance, refer to section 8.1.2.1). She remembers how she used to feel "fat" and still wanted to lose weight despite already being very slim, and how that did not change no matter how much weight she lost. However, she then described how she now views herself as a "new person" and feels confident and healthy. She feels much happier and no longer fights daily battles with her mind. She explained that her worth or beauty has never been relative to her weight and she is thankful that she eventually managed to recognise that. She finished the post by saying that if anyone else is suffering from an ED she hopes that they can re-evaluate what

they are doing. She also explained that she knows people silently suffer with EDs and she wanted them to take something positive from her post including the realisation that being skinny should not be a priority and that health and mental well-being are more important. This is an example of one type of support offered by users via pro-recovery posts, i.e., inspiring others to aim for recovery, reassuring others that it is possible to achieve recovery and that the struggle involved is worth it. Some other pro-recovery posts shared advice on how to combat disordered eating habits and sticking to a healthier lifestyle. For example, one user advised another that it is important to stick to regular meal times; saying that "no good" comes from counting how many calories are in everything they eat. They also offered reassurance that there is "nothing wrong" with not having a thigh gap and they revealed that they themself do not have one. They suggested that the other user aims to maintain good health and finds more healthy ways to keep in shape such as running. Other users simply offered support in the form of empathy, compassion and understanding.

Some pro-recovery users appeared to experience mixed emotions due to the daily conflict between their desire to engage in disorder eating behaviours and the desire to recover. For example one user blogged about her recovery saying that she has "bad days" on occasion. She explained that keeping on the track to recovery is made difficult by "dark thoughts" in her head and described herself as being tempted by bad intentions. Another pro-recovery user described how she had gained weight due to her recovery, and that she ultimately thought of this as a good thing because it meant she was recovering and that made her proud, but that another part of her was sad because that part of her still really wanted to lose weight. She explained that she felt like she gained too much weight and too quickly. Similar mixed emotions were portrayed by another recovering user who described how her dietician had just informed her that she was now in the healthy weight range and that this "freaked her out" because she knew that she would begin to obsess about her weight and be tempted to restrict her diet even though she was very happy to be feeling healthy at last. She described her fears of anything that she thinks may lead her back to anorexia. This suggests that users may use social media as a 'safe place' through which to express their mixed feelings about their recovery to others who understand what they are experiencing.

Some blogs were heavily dedicated to sharing pro-recovery content, i.e., the users appeared to run the blog mainly for this purpose and did not tend to share much, if any, other content. With the exception of those blogs belonging to ED charities and organisations, pro-recovery dedicated blogs appeared to be ran by users currently in recovery from their own ED. These users appear motivated to create a space to share their

journey and to provide a method through which to give and/or receive positive support to/from others.

Pro-recovery blogs on Tumblr (where a greater degree of user customisation is possible) tended to be colourful with positive imagery and slogans, e.g., one blog displayed the slogan 'life can be wonderful' and another stated 'recovery is possible'. The bright colours were in stark contrast to pro-ana blogs on Tumblr that tended to be devoid of colour. Pro-recovery bloggers appeared to be aiming to inspire a more cheerful, optimistic mood. It is possible that the users may use colour in this manner for the effect that it has upon themselves as well as the viewer, for example pro-recovery users may wish to be presented with a nice, cheerful, positive environment when they use their blog and they may use colour to inspire this. The use of colour may also represent another means to portray the positivity and happiness they have found or believe they are en route to achieve.

Some pro-recovery blogs included a link to a 'fear foods' list, i.e., a list of foods that the user has been 'scared' to eat in the past but for which they want to overcome their fear. Users would then cross out the items on the list as they conquered each fear.

Pro-recovery content provides evidence of a positive side to ED-related social media use. In contrast to the pro-ana content that makes media headlines (section 6.3), there also appears to be a positive, inspiring and supportive side to social media. As previously discussed, previous research has shown that this can be beneficial to users' well being (section 6.4). The quantitative analysis will look in more detail at the amount of pro-ana, anti-ana and pro-recovery content on Twitter and Tumblr. This will be supplemented by analysis of user motivations for sharing this content and will help to provide further insight into the positive and negative aspects of ED-related social media use.

8.1.2.3. Shared motivations between anti-ana and pro-recovery posts

Amongst the users sharing anti-ana and pro-recovery posts, two shared motivations became apparent: raising awareness and challenging social norms.

Some posts included links to media articles and other online content which appeared to represent a motivation to *raise awareness* about EDs amongst those that did not suffer with ED themselves, i.e., amongst the wider population. This included challenging stigma, and helping friends and family who may know someone with an ED. Shared media included online newspaper articles, references to TV documentaries and links to helplines and charity organisation websites. Some links directed users to guidance on how to identify the signs of anorexia in themselves and/or others, e.g., "Learn to recognise the signs of anorexia". Other posts challenged ED stereotypes and stigma, for example sharing

posts stating that not everyone with ED is skinny, female, diagnosed, in hospital, purges, is a teenager etc. Some users challenged the notion that you must be below a certain weight to have an ED; This is something that is now officially recognised within the DSM-5 with the introduction of the 'Other Specified Feeding or ED' (OSFED) diagnosis which includes individuals who present with eating behaviours but who do not meet the full criteria for anorexia nervosa, bulimia or binge eating (e.g., atypical anorexia nervosa is regarded as an individual who meets all the criteria for anorexia except their weight is within or above the normal range).

Other users *challenged social norms*, for example by expressing dissatisfaction with society's view on what constitutes 'beauty' and the social and cultural emphasis that is placed upon being "thin". This challenging of social norms is perhaps linked to the aforementioned need for greater public awareness, and in particular wider recognition of factors that may contribute towards the emergence of, or exacerbate pre-existing, disordered eating behaviour. One Twitter user stated that she hates society's obsession with having a thigh gap and that she is "curvy and proud". Another popular tweet shared the view that slender women are regarded as anorexic but curvy women are regarded as obese, that friendliness is regarded as fake and quietness as being rude, and that a virgin is regarded as 'too good' whereas a non-virgin is branded as promiscuous – the overall message being that society is never satisfied. One user recovering from anorexia explains how the pressure of conforming to the ideal affected her; she explains how she had previously been proud of the fact that she stayed honest to whom she was and would not change to fit the mould dictated by society. However she explains that upon developing anorexia everything changed and suddenly she was obsessed with conforming to society's idea of beauty.

Interestingly, some users also highlighted that this cultural view of 'thin as desired' seems to have led to a lack of understanding that calling someone skinny (or saying they look 'anorexic' as a replacement term for 'thin') can be hurtful. One user wrote about the negative comments she used to receive about her weight, e.g., how others would say she looked anorexic because she was slim. She explained how she was suffering from social anxiety and that these comments contributed to her suffering and depression and she expressed a hope that people will learn that calling someone anorexic can hurt as much as calling someone fat.

Challenging norms and raising awareness was evident on both platforms. The quantitative analysis examines if there are any significant differences in prevalence.

8.1.3. Other observations

8.1.3.1. Reblogging

All of the user groups, i.e., those sharing pro-ana, anti-ana and pro-recovery posts, relied heavily upon reblogged/retweeted content. Many users re-shared content without adding their own comments or opinions, instead views and beliefs were expressed through the insinuated support that is provided when a post is reblogged, i.e., the user's viewpoint, aims and goals are expressed through the sharing of material that is congruent to their views rather than explicitly stated. The quantitative analysis tests whether there are differences in the amount of reblogs for the different types of post (pro-ana, anti-ana and pro-recovery). Identifying the type of posts attracting the most reblogs/retweets provides an indication of the viewpoints of users on the platform and/or the type of post that receives the most positive reinforcement on these platforms (and therefore potentially has more impact upon users).

8.1.3.2. Trigger warnings

Many users recognised the potential for ED-related material to be triggering to vulnerable users. Therefore some users included 'trigger warnings' (sometimes abbreviated to TW) on their blog and/or posts, i.e., a statement that warned the viewer that content on the blog may 'trigger' disordered eating in vulnerable users. When featured, these were often included within the biography or header section of the user's blog profile. Perhaps more controversially, users sometimes included the trigger warning as a hashtag within the post itself, e.g., #TW. The use of a hashtag as a trigger warning perhaps seems contradictory given that hashtags are primarily used to find content not to avoid it, suggesting that in some cases users may purposefully search for triggering content (as suggested by Borzekowski et al., 2010b). However it is possible that it is also being used as a label to try to warn vulnerable viewers not to read the post. The hashtag does have the benefits of being very short and easy to include, without taking up too many characters and also the inclusion of a hashtag may make it a more noticeable, visual element than simply including the warning within the text.

The use of trigger warnings, including investigating their effectiveness and users' reported motivations for their use, provides an interesting area for future research. In the meantime and for the purposes of the current research, trigger warnings demonstrate that users may not be blind to the potential risks of communicating about EDs online.

8.1.3.3. ED-related humour

During analysis it was found that some users were referencing ED in humour. Often the words were used out of context and in a flippant manner for example in one joke 'anorexia' was used as a substitute for the word 'empty', e.g., "my kitchen cupboards are so empty they're anorexic". Whereas others used the term to refer to being very 'skinny', e.g., "Imagine how great life would be if junk food made u skinny" received the reply "I would be anorexic". In other instances ED terms were used as 'playful' insults between friends, e.g., one male user sent a tweet to his male friend calling him a "bulimic bitch", whilst another user tweeted "[@username] is so thin I named my ED after her" – both recipients retweeted and favourited the posts indicating that they had been received as humourous and not hurtful. However, others may view these posts as trivializing a serious disorder and/or ridiculing those who suffer from disordered eating.

There were instances where it was difficult to tell if the user was being serious or whether they were using ED in an off the cuff manner, e.g., "how this girl wanna be anorexic" [referring to herself]. However, some of these posts appeared to be from users who had not otherwise mentioned ED in their blogs therefore suggesting that these comments were made 'tongue in cheek'. It is a topic for debate whether such casual use of these terms could have negative consequences for sufferers and/or fuel stigma associated with these 'labels'. One user asked others to not make jokes about thinspiration and ED communities. They explained how laughing about the sharing of ED content makes fun of those users suffering from EDs and how, in their opinion, it is "laughing at someone who gets treat like dirt". They requested that humour is not used in a way that can push "mentally ill people down". This is a sentiment that was also echoed in a popular reblog that simply said "do not make fun of something you do not understand" and included hashtags linking it to a range of disorders including EDs.

During the qualitative analysis, humour appeared to be more common on Twitter than Tumblr - this will be tested during the quantitative analysis. Testing for differences in humour may provide an indication of whether the platforms differ in the seriousness of which they refer to ED, e.g., are references to ED on Tumblr of a more serious manner than those on Twitter which perhaps tend to be mainly 'off the cuff comments' rather than an indication of serious communication? Measuring humour will also allow non-serious comments to be controlled for during the quantitative analyses to investigate whether the results differ when analysis is restricted to content of a serious nature.

8.1.3.4. Deleted posts

During the analysis it was noted that some of the posts and/or blogs had been deleted in the 1 ½ - 2 month period since the date of data collection in June 2014 (the qualitative analysis was conducted between late July - early August 2014). Deleted posts were identified by attempting to access the post via the website URL recorded during collection.

Deleted posts may indicate user regret over the content they have shared, i.e., similar to 'Facebook regret' (Wang et al., 2011). Wang et al. identified that Facebook users may feel regret over content they share online. Some of the possible reasons for regret include: the user not considering (or not recognising) the potential negative consequences of their posts, the user misjudging the norms within their social circles, the post being misinterpreted or seen by an unintended audience, or the user posting whilst in a high state of emotion. It is possible that users sharing ED material on Twitter and Tumblr may sometimes experience similar regret - particularly due to the sensitive nature of the topic, the social 'taboo' around the behaviour, and the potential for high emotion. Regret may be fuelled by negative reactions from family, peers and loved ones or feelings of embarrassment at sharing information that the user may normally regard as too personal to be shared via social media.

Alternatively deleted posts could signify that the post has served its purpose for the user (e.g., expressing pent up emotion) and is simply no longer needed, or that the posts have been removed by family or by the platform itself due to the posts being reported as violating platform terms and conditions. Anonymous users may also delete posts that they feel jeopardize their anonymity. It was also notable that some pro-recovery users appeared to have cleared their blog content and started afresh at the start of their recovery. Therefore this could indicate that some users may delete posts that they regard as 'triggering' and/or which represent a past they wish to leave behind.

This poses the question of whether deletion rates are higher for certain types of post, i.e., pro-ana, anti-ana or pro-recovery posts. If posts are being deleted due to regret over sharing a sensitive or potentially embarrassing topic, fears of negative social reactions or repercussions (e.g., hospitalisation or removal of the social media account), wishing to remove triggering and/or negative material or by the platform moderators due to breaching the terms and conditions of use, it may be expected that pro-ana material would show the highest deletion rate. Whilst the removal of pro-recovery posts could indicate a wish to 'move on', i.e., not wishing to be reminded of having suffered from ED and/or the removal of ED-related blog content as symbolic of embracing a 'new' life. The removal of anti-ana posts could indicate regret over posting about an emotive or controversial subject. There are many reasons why posts may be deleted - identifying whether there are

any differences in the deletion rates for particular types of post is the first step to investigating this further. This is investigated in the quantitative analysis.

8.1.3.5. Gender differences

Although it was expected from previous research that females would be the predominant users within pro-ana communities (section 6.5), it still came as a surprise to find no evidence of male thinspiration images during the thematic analysis. There also appeared to be only a few males commenting about EDs in a serious manner across both the platforms. In contrast to females, male users appeared more likely to mention disordered eating in a trivialized or humourous context, for example 'playfully' calling their friends anorexic or using the term in a flippant manner such as "my fridge is so empty it's anorexic". Although the proportion of males suffering from EDs is considered to be rising (refer to section 6.1), the qualitative analysis initially suggests that males may be less likely to communicate about this through Twitter and Tumblr.

8.1.4. Refining the research questions for quantitative analysis

The research questions introduced at the beginning of the study were refined in accordance with the themes that emerged from the qualitative analysis:

1. What types of posts are being shared on each platform?

Different types of material were identified by the thematic analysis with some more positive in nature (e.g., anti-ana and pro-recovery) and some more negative (e.g., pro-ana). Considering that ED related posts differed in their nature and bearing in mind that certain social media platforms have been labelled as risky or 'toxic' in the mass media (section 6.3), this raised the question whether the platforms differ in the types of posts that users share - i.e., is there evidence to suggest that one platform is used more for sharing positive ED content (e.g., anti-ana and pro-recovery) and one for sharing negative ED content (e.g., pro-ana) or are the same types of post found across both platforms?

Initial impressions from the thematic analysis suggests that although both platforms appeared to share positive anti-ana and pro-recovery content, Tumblr may be more 'negative' in terms of pro-ana content, references to depression and suicide and dedicated pro-ana blogs. However it was noted that this observation may be due to the more immediate visual impact of the platform (section 6.6.1.3) rather than the quantity of pro-ana content present. The quantitative analysis tests whether there are differences in the *amount* of pro-ana content on each platform.

2. What motivations do people have for posting ED content on each platform?

The thematic analysis also identified potential motivations for users posting ED-related content online, e.g., to express pro-ana or pro-recovery views (including sharing of body images), to express emotion, to offer and/or seek support, to raise awareness, to challenge social norms, and to express humour. Therefore the second research question asks whether user motivations differ between the two platforms, for example do more users look for support on one platform compared to the other?

The thematic analysis suggests that humour may be a stronger theme on Twitter than Tumblr. However, challenging social norms and aiming to raise awareness around ED appeared to be a stronger theme on Tumblr.

3. Who is sharing pro-ana/anti-ana/pro-recovery content?

The last research question looks at whether there are user differences in the type of content shared, e.g., pro-ana, anti-ana and pro-recovery. Due to small numbers of pro-ana content, this analysis is conducted by collapsing the data across the two platforms.

The findings from the qualitative analysis suggest that there may be gender differences, with more females communicating about ED in a serious manner, whereas males appear to be communicating in a more flippant manner (section 8.1.3.3). As pro-ana material is often linked to younger users by the mass media (see section 6.3), age differences will also be investigated.

This analysis will also seek to identify if there are differences between the pro-ana/anti-ana/pro-recovery user groups for the following factors:

a. User anonymity – as aforementioned (Chapter 7) it has been speculatively suggested that greater anonymity may be linked to increase negative content/consequences; with anonymous platforms linked to numerous fatalities (e.g., "Tragic Erin named Ask.fm in suicide note, claims mother", Irish News, 14th August 2013).

b. Originality of content (original vs. reblogged) – investigating whether users are writing their own posts or re-sharing posts by other users may provide insight into the role that social media play in their lives. Previous research suggests that re-sharing can act as a form of self-validation and positive reinforcement (Courtois et al., 2009); both for the original poster, and for the user sharing the material. This may be particularly important for isolated individuals such as those suffering from ED (Adams et al., 2005). Although whether this validation has a positive or

negative outcome is still unknown and may be related to the source of the validation. The qualitative analysis suggests that reblogging may be more prevalent within the pro-ana user groups. Original posts may suggest that the user is using social media as a platform to make their voice heard, therefore it is predicted that there will be more original posts for anti-ana and pro-recovery users (e.g., due to challenging pro-ana views or sharing their experiences).

c. Number of reblogs – Identifying the type of posts attracting the most reblogs provides an indication of the viewpoints of users on the platform and/or the type of post that receives the most positive reinforcement on these platforms (and therefore potentially has more impact upon users). This will provide an initial measure of whether positive content, such as pro-recovery content, is gaining more attention from users than negative content (e.g., pro-ana) or vice versa.

d. Blog references to depression/suicide or SH – Investigating whether references to these subjects differs according to the nature of the users' posts (i.e., pro-ana, anti-ana, pro-recovery) may provide an indication of 'at-risk' user groups. This finding has important implications irrespective of whether this negative emotion is directly linked to their social media use.

e. Eating disorders as major blog theme – exploring whether EDs feature as a major theme on users' blogs will indicate the extent to which their usage is dominated by communication about EDs. This in turns provides a possible indication to the extent to which EDs play a role in their lives: whether this is for negative reasons (e.g., encouraging ED behaviour) or positive reasons (e.g., documenting recovery). Concerns within the media suggest that pro-ana users will be more preoccupied with EDs than others (section 6.3), however the qualitative analysis suggests that this may also be found for pro-recovery users (section 8.1.2.2).

8.2. Developing the coding scheme

The quantitative coding scheme was developed by drawing upon the main themes that emerged from the qualitative data and the subsequent research questions. Mutually exclusive codes were created using the methodology explained in Chapter 6. Table 8.1 provides a summary of the coding scheme and results of the inter-rater reliability tests (a copy of the full coding scheme is included in Appendix D). Age and location were coded if included on the users' profiles. The number of retweets/reblogs for each post was also recorded.

Table 8.1. Summary of coding scheme used for the quantitative analysis and reliability analysis results. Reliability analysis, *n* = 71.

Code	Description	Levels	Kappa
Gender	Whether the user was male, female or from an organisation (e.g., charity or business)	Unclear / Male / Female / Organisation	.884
Anonymity	Whether the user was anonymous (no full name provided), partly anonymous (identifiable photo but no full name provided) or not anonymous (full name provided).	Unclear / Anonymous / Partly Anonymous / Not Anonymous	.702
ED major theme	Whether thinness/ED related material was as a major theme on the user's blog. Pro-ana/anti-ana/pro-recovery judgment based upon an overall evaluation of the most prominent theme.	Pro-ana / Anti-ana / Pro-recovery / Unclear / No	1.00
Blog reference to depression/suicide/SH	Whether the user's blog expressed depressive feelings, suicidal feelings, and/or reference to SH.	Yes / No	.790
Original post	Whether the post was original, i.e., written by the user.	Yes / No / Unclear	.855
Pro-ana post	Whether the post expressed a pro-ana attitude or behaviour, i.e., communicating about EDs as a positive behaviour and/or encouraging disordered eating in others.	Yes / No / Unclear	.892
Pro-recovery post	Whether the post expressed a pro-recovery attitude.	Yes / No / Unclear	.847
Anti-ana post	Whether the post expressed an *anti* pro-ana attitude, i.e., a negative attitude towards users who shared content that could encourage disordered eating in others.	Yes / No / Unclear	.740
Body images	Whether the post shared images as thinspiration or alternatively to challenge norm around thinness as the ideal.	Thinspiration / Challenging norm / Unclear purpose / No images	.804
Emotion	The emotion expressed by the user by writing or reblogging the post.	Negative / Positive / Mixed / No emotion	.703
Support offered	Whether support was offered to other users in the post, and type of support offered.	Unclear purpose / Pro-ana / Anti-ana (incl. pro-recovery) / No support	.725
Support requested	Whether support was requested from other users in the post, and type of support requested.	Unclear purpose / Pro-ana / Anti-ana (incl. pro-recovery) / No support	1.00
Raising awareness	Whether the post appeared to aim to raise awareness of issues around ED in others	Yes / No	.732
Challenging norms	Whether the post appeared to be aiming to challenge social norms, e.g., pressure to be thin	Yes / No / Unclear	.760
ED humour	Whether the post referred to ED in a humourous manner.	Yes / No / Unclear	.757

8.3. Quantitative analysis

8.3.1. Sample demographics and blog/post characteristics

From the original data set, a random sample of 842 items (353 Tweets and 356 Tumblogs) was selected for the quantitative analysis. One hundred and fourteen cases were excluded due to being spam or in a non-English language.

Only posts and blogs which were public, i.e., openly accessible, were used for the data collection. However, between the 2-3 month period from data collection to data analysis (the quantitative analysis was conducted in August and September 2014), 161 of these cases deleted their blog and/or post or changed their privacy settings so that the items were no longer publically accessible; meaning that the original item could no longer be accessed online. Where possible, deleted and private items were coded using the data captured during the initial data collection. However for 19 of the deleted cases there was not enough data captured to allow any coding to take place; therefore these 19 cases were excluded from the sample.

The final sample consists of 709 cases (353 from Twitter and 356 from Tumblr). Power analyses using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) with power (1 - β) set at 0.80 and $\alpha = .05$, indicate that this sample size is sufficient to detect an effect size of .12; a small effect size (Cohen, 1992 provides a guideline of .10 for a small effect size and .30 for a medium effect size).

Table 8.2 displays the status of the post at the time of data analysis, i.e. whether the post was:

1. Still accessible - i.e., still openly/publically visible on the platform.
2. Had been made private - i.e., only viewable to those whom the user pre-approved.
3. Had since been deleted.

Table 8.2 also shows whether the deleted and private items could be fully coded, i.e., whether both the blog and post were coded or whether only partial coding was possible, i.e., coding only the blog *or* the post.

Table 8.2. Sample demographics and blog/post characteristics.

			Twitter (n = 353)	Tumblr (n = 356)
Blog and post status	Still present & fully coded		287 (81.3%)	261 (73.3%)
	Post and/or blog made private since data collection***	Only blog coded	0	0
		Only post coded	10 (2.8%)	2 (0.6%)
		Fully coded (blog and post coded)	1 (0.3%)	0
	Post and/or blog deleted since data collection	Only blog coded	0	6 (1.7%)
		Only post coded	42 (11.9%)	74 (20.8%)
		Fully coded (blog and post coded)	13 (3.7%)	13 (3.7%)
Gender	Male***		52 (14.7%)	20 (5.6%)
	Female		249 (70.5%)	196 (55.1%)
	Organisation***		15 (4.2%)	2 (0.6%)
	Unclear***		20 (5.7%)	65 (18.3%)
	Missing (deleted blog)		17 (4.8%)	73 (20.5%)
Age	13 – 17 yrs		22 (6.2%)	42 (11.8%)
	18 – 24 yrs		19 (5.4%)	44 (12.4%)
	25 – 27 yrs		1 (0.3%)	1 (0.3%)
	M (*SD*)		18.21yrs (2.66yrs)	18.08yrs (2.83yrs)
	Age not available		311 (88.1%)	269 (75.6%)

Location	USA	78 (22.1%)	33 (9.3%)
	UK	19 (5.4%)	12 (3.4%)
	Canada	6 (1.7%)	5 (1.4%)
	Germany	5 (1.4%)	5 (1.4%)
	Other (countries <1% of sample)	19 (5.4%)	9 (2.5%)
	Location not available	226 (64%)	292 (82%)
Anonymity	Anonymous***	95 (26.9%)	172 (48.3%)
	Partly anonymous (photo)	116 (32.9%)	90 (25.3%)
	Named (full name)***	112 (31.7%)	15 (4.2%)
	Unclear	1 (0.3%)	1 (0.3%)
	Missing (deleted blog)	29 (8.2%)	78 (21.9%)
Original post vs. reblog	Original post***	213 (60.3%)	47 (13.2%)
	Reblog/retweet***	134 (38%)	293 (82.3%)
	Unclear	4 (1.1%)	0
	Missing (deleted post)	2 (0.6%)	16 (4.5%)
Reference to depression, suicide or SH	Yes*	29 (8.2%)	45 (12.6%)
	No *	272 (77.1%)	235 (66%)
	Missing (deleted blog)	52 (14.7%)	76 (21.3%)

Note: Significant post-hoc chi-square results indicated, *** $p<.001$, ** $p<.01$, * $p<.05$.

A chi-square test revealed a significant effect of platform on post status (present, deleted or private), X^2 (2, N = 709) = 17.21, p<.001, φ_c = .16. Post-hoc comparisons using a Bonferroni adjustment (a = .017) show a significant difference in the amount of deleted posts across the two platforms, X^2 (1, N = 709) = 11.93, p = .001, φ = .13. Users on Tumblr were over 1 ½ times more likely to have deleted posts than users on Twitter (RR = 1.67).

There was also a significant difference in the number of posts/blogs that have been made private by users across the two platforms, X^2 (1, N = 709) = 6.43, p = .011, φ = .10, RR = 5.17. Users on Twitter were 5 times more likely to make their posts private. However it should be noted that occurrences of private blogs/posts were very low within the overall sample (n = 13).

Although deleted posts could potentially indicate regret over the content posted (as discussed in section 8.1.3.4), there was no significant difference between the pro-ana, anti-ana and pro-recovery posts in relation to post status, i.e., whether the post was still publically accessible or whether it had been made private or deleted, X^2 (4, N = 498) = 7.91, p = .094 (Table 8.3). This suggests that there are no differences in the amount of potential 'regret' felt by users depending on the type of post shared.

Table 8.3. Post status according to content type, i.e., pro-ana, anti-ana and pro-recovery.

	Pro-ana (n = 140)	Anti-ana (n = 270)	Pro-recovery (n = 88)
Present	103 (73.6%)	218 (80.7%)	69 (78.4%)
Private	6 (4.3%)	2 (0.7%)	1 (1.1%)
Deleted	31 (22.1%)	50 (18.5%)	19 (20.5%)

8.3.1.1. Gender

User gender was coded in just over 87% (n = 619) of the sample. Ninety missing cases were not coded due to the blogs being deleted and no gender information being captured by the initial data collection.

Almost 72% of the items were posted by female users (n = 445) and 11.6% were posted by male users (n = 72). Over 13.7% of the cases were unclear for gender (n = 85) and organisations made up the remaining 2.5% of the sample (n = 17, Table 8.2).

Males were therefore in the minority within the sample at just over one-quarter. This may suggest that although the proportion of males suffering from EDs is said to be rising (section 6.1), males may be less likely to communicate about this through social media platforms, compared to females (although it is still possible that males may be searching

for/viewing related content). As female users are generally more prolific on social media in general (refer to study 1, phase 1), further research is required to identify the proportions of male and female users on each of the platforms and to test whether the amount of males blogging about EDs in this study is proportionately less than would be expected given the overall amount of male users.

If males *are* communicating less about ED online, this may simply be due to the role which social media plays for each of the genders. As found in the first phase of study one, females use social media for more social reasons such as connecting with others, whereas males appear to use social media more for utilitarian reasons such as achieving career related goals, playing games, and finding new sexual partners. Alternatively, it could indicate that males still feel that there would be stigma attached to openly discussing ED, although arguably such males could use social media anonymously if required. Gender could not be coded for a total of 175 cases in this sample; therefore it is possible that this subgroup may represent some anonymous male users.

There was a significant overall relationship between the platform used and the gender of the user, X^2 (3, N = 619) = 50.13, p<.001, φ_c = .29. Post-hoc comparisons using a Bonferroni adjustment (a =.013) show significantly more posts from male users on Twitter than Tumblr, X^2 (1, N = 619) = 10.57, p = .001, φ = .13, RR = 2.18 (male vs. other). There was no significant difference between the platforms in the amount of posts from females, X^2 (1, N = 619) = 1.79, p = .181 (females vs. other).

However, there were significantly more posts from users with an unclear gender on Tumblr than on Twitter, X^2 (1, N = 619) = 37.55, p = <.001, φ = .25 (unclear vs. other), with the gender of Tumblr users almost 4 times as likely to be unclear compared to Twitter users (RR = 3.83). This is in keeping with Tumblr users being more likely to be anonymous (analysed further in section 8.3.1.4). Therefore it is not possible to establish whether the greater number of males on Twitter than Tumblr represents a genuine gender difference, or if this is due to male users on Tumblr being more likely to be anonymous. As previously discussed during the qualitative analysis (section 8.1.3.3) males on Twitter appeared to be more likely to be referencing EDs in a non-serious/humourous manner. Therefore it is possible that males wishing to talk about EDs in a more sensitive context may opt to anonymously use Tumblr (refer to section 6.6.1.1., 'private-public or open public').

Although organisations were the minority of the sample (n = 17), there were significantly more posts from organisations on Twitter, X^2 (1, N = 619) = 8.12, p = .004, φ = .12, RR = 6.43 (organisation vs. other), with only 2 posts from organisations on Tumblr. This is likely to be a consequence of Twitter being more commonly regarded as a broadcasting medium (section 6.6.1).

8.3.1.2. Age

Age was provided by just over 18% of the sample (n = 129, Table 8.2). A chi-square test between the age groups (excluding missing cases and those where no age information was available) showed no significant age group differences between the platforms, X^2 (2, N = 129) = .538, p = .764. There was also no significant difference in the mean age across both platforms, t(127) = .256, p = .798.

Of the users who supplied age details on their blogs, all were 27 years of age or below with the majority in the 13-24 years age range; suggesting that younger users may be more likely to communicate about EDs through social media. This is in keeping with public and media speculation, however as the majority of users did not supply any age details, it is also possible that older users simply chose not to share their age. Future research could involve interviews with a wide age-range of participants to discuss the likelihood that they would consider communicating about EDs via social media; this could provide more insight into whether this behaviour is more common in younger users or whether this simply reflects age differences in users who include age details on their profiles. This is particularly important given previous research that suggests adolescents may experience a "window of vulnerability" during which they may be more susceptible to social influence and/or struggling with emotional control (Moran et al., 2012; Morey et al., 2011; Patton et al., 2007).

8.3.1.3. Location

Location information was not available for 73.2% (n = 518, Table 8.2) of the sample due to this information not being provided by the users and/or the blog being deleted since the original data collection. Of those who did provide location details (n = 191) the majority were from the USA. There were no significant differences between the platforms for user location, X^2(4, N = 191) = 3.04, p = .552.

8.3.1.4. User anonymity

User anonymity was recorded for each of the blogs identifying whether users were fully anonymous (no full name or photograph), partly anonymous (identifiable photograph but no full name), or not anonymous/named (full name given).

For the following analyses, 2 unclear cases and 107 missing cases were excluded (due to deleted blogs where coding of anonymity was not possible. The remaining 19 deleted blogs provided full name information on their post so these cases were still coded as named).

The anonymity of users was significantly related to platform choice, X^2 (2, N = 600) = 96.62, p<.001, φ_c = .40. Post hoc comparisons using a Bonferroni adjustment (a = .017) show that users on Tumblr were significantly more likely to be anonymous (anonymous vs. other) than users on Twitter, X^2 (1, N = 600) = 64.49, p<.001, φ = .33, RR = 2.11. In contrast, Twitter users were almost 6 ½ times more likely to use their full name compared to Tumblr users, X^2 (1, N = 600) = 76.51, p<.001, φ = .36, RR = 6.43 (named vs. other). Many users chose to be partly anonymous, i.e., sharing an identifiable photograph but not their full name but there were no significant differences in the number of partly anonymous users across both platforms, X^2 (1, N = 600) = .78, p = .379 (partly anonymous vs. other).

These findings are in keeping with previous research (e.g., Marwick & boyd, 2010) which has shown that Twitter is largely used as a broadcast medium where a lack of anonymity is the 'norm' whereas Tumblr tends to be used more anonymously by users and screen names/aliases are more common (section 6.6.1.1).

8.3.1.5. Post originality

Over 60% of the posts on both platforms were a reblog/retweet (n = 427), i.e., the majority of users were re-sharing content that already existed on the platforms rather than uploading original content that they had personally written or created. It has been suggested that the re-sharing of content may represent a form of self-validation and positive feedback and may be tied to users well-being in isolated user groups (Adams et al., 2005); this could explain why reblogging may be particularly important for users communicating about ED.

Excluding deleted and unclear cases (n = 22), there was a significant effect of platform on post originality, with Twitter users almost 4 ½ times more likely to share original content compared to Tumblr users who shared more reblogs, X^2 (1, N = 687) = 165.14, p<.001, φ = .49, RR = 4.45. This suggests that users on Twitter may be more likely to use the platform as a medium to make their own opinions heard. As Twitter has generally been regarded as a more public broadcasting medium (compared to the more private Tumblr platform. Refer to section 6.6.1.1), it would appear logical that users wishing to make their 'voice heard' would opt for Twitter.

8.3.1.6. Blog references to depression, suicide and/or SH

Analysing the users' overall blog (rather than just the individual post) revealed that almost 10.5% of the coded blogs within the sample referenced depression, suicide and/or SH (n = 74). Missing cases due to deleted blogs were excluded for the following analysis (n = 128).

Tumblr users were over 1 ½ times more likely to reference depression, suicide and/or SH than Twitter users, X^2 (1, N = 581) = 5.41, p = .02, φ = .10, RR = 1.68.

Analysing the blog rather than solely the individual post provides a more comprehensive view of the users' use of the platforms and may act as a potential indication of their wellbeing (which could be missed should analysis be restricted to the individual post). The findings suggest that Tumblr users may be using the platform to discuss sensitive issues and topics. Tumblr may be regarded as a more suitable platform for this type of material due to its more private nature and greater anonymity, whereas Twitter has been regarded as an inappropriate platform for sharing sensitive information (Marwick & Boyd, 2010). It is also possible that the longer word limit and/or more visual representation, is a more appealing platform for expressing negative thoughts and experiences compared to the shorter, more clinical and more public nature of Twitter. Alternatively it could suggest that the platform itself is having an impact upon users' thoughts and behaviour. However it is not possible to identify casual relationships from the current data. Further research would be necessary to achieve this. This is discussed in more detail in the discussion (section 8.4).

8.3.1.7. Eating disorder posts as a major blog theme

The blogs on each platform were analysed for whether they showed ED or thinness as a major theme, i.e., whether the user had numerous posts about these topics on their blog. Those blogs that did show ED/thinness as a major theme, were categorised based upon an overall evaluation of the *most prominent/dominant* theme, i.e. pro-ana, anti-ana or pro-recovery.

Table 8.4 summaries the results of this blog analysis and shows that over 16% of the blogs in the sample showed EDs and/or thinness as a major theme (n = 114). Excluding missing cases due to deleted blogs (n = 128), there was no significant difference between the platforms for the proportion of blogs with ED/thinness as a major theme, X^2 (4, N = 581) = 5.83, p = .212.

Comparing only those blogs that *did* show ED/thinness as a major theme, there was also no difference between the platforms for the *type* of theme, i.e., pro-ana, anti-ana, pro-recovery or unclear, X^2 (3, N = 114) = 3.82, p = .282.

Therefore despite media speculation that users are being lost in an immersive digital world dedicated solely to communicating about ED (section 6.3), these claims appear to be largely unfounded with only the minority of users engaging in ED-dedicated blogging.

Table 8.4. Between platform comparisons of ED/thinness as a major blog theme.

	Twitter (n = 353)	Tumblr (n = 356)
Pro-ana	39 (11%)	25 (7%)
Anti-ana	0	1 (0.3%)
Pro-recovery	23 (6.5%)	15 (4.2%)
ED dedicated blog but theme unclear	4 (1.1%)	7 (2%)
N/A - ED not a major blog theme	235 (66.6%)	232 (65.2%)
Missing (deleted blog)	52 (14.7%)	76 (21.3%)

8.3.2. What types of posts are being shared on each platform?

Having identified differences in user demographics and blog characteristics across the two platforms, analysis now focuses upon identifying whether there are differences in the type of ED content being shared on each platform (i.e. pro-ana, anti-ana or pro-recovery) by analysing the individual posts:

8.3.2.1. Sharing pro-ana, anti-ana and pro-recovery posts

Of the total sample, over 70% of posts were sharing pro-ana, anti-ana or pro-recovery content (n = 498). Of these posts, the most common theme was anti-ana with almost double the amount of anti-ana posts (38.1%) compared to pro-ana posts (19.8%). There was also evidence of social media being used to discuss, encourage and/or document ED recovery, in the form of pro-recovery posts (12.4%, Table 8.5). This is reassuring to see and it is in stark contrast to the negative view often portrayed in the mass media. That is not to say that there is no potentially damaging ED-related material being shared, as there were still users on both platforms sharing pro-ana material.

Many of the pro-ana, anti-ana and pro-recovery posts appeared to be shared in 'humour' (n = 106, 21.3%); therefore in order to account for those comments which may have been said in a 'tongue in cheek' manner, the analyses were also conducted with humourous posts excluded (seven posts coded as 'unclear' for humour were also excluded) and any instances where this affected the significance or nature of the results is noted in the following sections.

There was a significant effect of platform upon the type of content shared (pro-ana, anti-ana or pro-recovery), X^2 (2, N = 498) = 33.26, p<.001, φ_c = .26 (Table 8.5). Post hoc comparisons using a Bonferroni adjustment (a =.017) show that there was significantly

more pro-ana content shared on Twitter compared to Tumblr, X^2 (1, N = 498) = 31.54, p<.001, φ = .25, RR = 2.26 (pro-ana vs. other).

In contrast there was significantly more anti-ana material on Tumblr compared to Twitter, X^2 (1, N = 498) = 22.86, p<.001, φ = .21, RR = 1.51 (anti-ana vs. other).

There was no significant difference between the platforms for pro-recovery content, X^2 (1, N = 498) = 140, p = .709 (pro-recovery vs. other).

Given the nature of the platforms, it is surprising to find that there were more pro-ana posts shared on Twitter than on Tumblr, and conversely more anti-ana posts shared on Tumblr than Twitter. It was hypothesised that more pro-ana content would be found on Tumblr due to it being a more private, anonymous platform (section 6.6). It has previously been suggested that Twitter is regarded by users as a place where the strictest online standards apply and it is not regarded as an appropriate platform for sharing sensitive information (Marwick & boyd, 2010). Therefore, it was expected that extreme views such as pro-ana would be less prevalent on Twitter (please refer to section 8.4 for further discussion).

It is possible that the greater proportion of anti-ana posts on Tumblr is due to a stronger reblogging culture on that platform (refer to section 8.3.1.5). Anti-ana posts show a tendency to be reblogged posts whereas pro-ana posts show a stronger tendency to be original posts written or created by the users themselves (refer to section 8.3.3.4). Due to Twitter's broadcasting nature, it is possible that users who wish to express their own opinion use this platform more. However this is speculative at this stage and further analysis of general (i.e., non-ED/SH specific) Tumblr and Twitter content would be required to enable comparison against the average amount of reblogs vs. original posts on each platform. Alternatively, it is possible that pro-ana content on Tumblr is seen as worse in *severity* and therefore more users on that platform feel the need to share anti-ana content to challenge it. This is discussed further in the discussion at the end of the chapter (section 8.4).

Pro-recovery posts were the least prevalent type of ED post across both platforms, suggesting that users who are in recovery may stop communicating about EDs on social media. This could be due to choosing to use their blog to discuss other topics or withdrawal of their social media account through preference (e.g., to avoid triggering behaviour) or due to constraints restricted by friends, family or health professionals.

Table 8.5. Between group comparisons of user motivations for sharing pro-ana, anti-ana and pro-recovery content.

	Type of post	Twitter (n = 353)	Tumblr (n = 356)
Sharing pro-ana, anti-ana or pro-recovery content	Pro-ana***	91 (25.8%)	49 (13.8%)
	Anti-ana***	95 (26.9%)	175 (49.2%)
	Pro-recovery	38 (10.8%)	50 (14%)
	Unclear if pro-ana/anti-ana or pro-recovery	16 (4.5%)	15 (4.2%)
	Not sharing pro-ana, anti-ana or pro-recovery content	113 (32%)	61 (17.1%)
	Missing (deleted post)	0	6 (1.7%)
Sharing body images	Thinspiration***	32 (9.1%)	44 (12.4%)
	Challenge thinness as norm***	1 (0.3%)	95 (26.7%)
	Image shared, unclear purpose	4 (1.1%)	17 (4.8%)
	No image shared	316 (89.5%)	194 (54.5%)
	Missing (deleted post)	0	6 (1.7%)
Expressing emotion	Negative	28 (7.9%)	23 (6.5%)
	Positive	7 (2%)	3 (0.8%)
	Mixed**	1 (0.3%)	9 (2.5%)
	No emotion expressed	317 (89.8%)	315 (88.5%)
	Missing (deleted post)	0	6 (1.7%)
Offering support	Support offered – pro-ana	3 (0.8%)	3 (0.8%)
	Support offered – anti-ana and/or pro-recovery	29 (8.2%)	35 (9.8%)

	Support offered – unclear purpose	2 (0.6%)	3 (0.8%)
	No support offered	319 (90.4%)	309 (86.8%)
	Missing (deleted post)	0	6 (1.7%)
Requesting support	Support requested – pro-ana	2 (0.6%)	0
	Support requested – anti-ana and/or pro-recovery	1 (0.3%)	3 (0.8%)
	No	350 (99.2%)	347 (97.5%)
	Missing (deleted post)	0	6 (1.7%)
Raising awareness about ED in others	Yes*	35 (9.9%)	53 (14.9%)
	No*	318 (90.1%)	297 (83.4%)
	Missing (deleted post)	0	6 (1.7%)
Challenging social norms about thinness	Yes***	46 (13%)	134 (37.6%)
	No***	307 (87%)	216 (60.7%)
	Missing (deleted post)	0	6 (1.7%)
Expressing ED related humour	Yes**	96 (27.2%)	64 (18%)
	No**	245 (69.4%)	284 (79.8%)
	Unclear	12 (3.4%)	2 (0.6%)
	Missing (deleted post)	0	6 (1.7%)

Note: Significant post-hoc chi-square results testing for differences between the platforms are annotated in the table; *** = p<.001, ** = p <.01, * = p<.05

8.3.2.2. Body images

Posts were coded according to whether they included body images, i.e., images depicting the human figure and body shape. Posts contained body images in 27.1% of the overall sample (n = 193). Comparing between the two platforms, Tumblr users were significantly more likely to include body images in their posts, X^2 (1, N = 703) = 131.16, p<.001, φ = .43, RR = 4.2 (excluding 6 deleted cases, Table 8.5).

The 193 posts which did include body images were coded according to whether they appeared to be shared as 'thinspiration' (i.e., an image shared as an incentive or 'inspiration' for the user and/or the viewer to lose weight), or to challenge social norms around thinness and appearance (e.g., disagreeing with the pressure felt to conform to societies idea of thin as beauty) or whether the reason for sharing was unclear.

A between platform comparison revealed a significant difference in the type of body image shared, X^2 (2, N = 193) = 46.16, p<.001, φ_c = .49. Post-hoc comparisons using a Bonferroni adjustment (a = .017) showed that Tumblr users share significantly more thinspiration images compared to Twitter users, X^2 (1, N = 193) = 42.55, p<.001, φ = 47, RR = 3.07 (thinspiration vs. other).

There was also a significant difference found for images which challenged social norms about thinness and appearance, X^2 (1, N = 193) = 40.51, p<.001, φ = .46, RR = 22.6; Tumblr users were over 22 ½ times more likely to share body images challenging social norms compared to Twitter users, with the latter only showing a single occurrence (refer to table 8.5). As Tumblr is generally a more visual platform, it is not surprising that more images were found upon this platform (section 6.6.1.3). However, this could raise concerns that Tumblr users may be more likely to see potentially triggering material.

8.3.2.3. Expressing emotion

Posts were coded according to whether the user appeared to be expressing positive emotion, negative emotion, mixed emotion (i.e., positive *and* negative), or no emotion at all (Table 8.5). The majority of posts did not express any emotion (n = 632). Comparing the 71 cases that *did* express emotion, a chi-square test showed a significant difference in the type of emotion expressed between the platforms, X^2 (2, N = 71) = 8.48, p = .012, φ_c = .35. Post-hoc comparisons using a Bonferroni adjustment (a = .017) revealed that Tumblr users are significantly more likely to express mixed emotions compared to Twitter users, X^2 (1, N = 71) = 7.72, p = .007, φ = .33, RR = 9.18. No significant differences were found between the platforms for the amount of negative emotion expressed, X^2 (1, N = 71) = 1.28, p = .259, or the amount of positive emotion expressed, X^2 (1, N = 71) = 1.73, p = .309.

8.3.2.4. Offering and requesting support

Excluding missing cases (n = 6), there were no significant differences between the platforms for the amount of posts offering ED-related support to other users, X^2 (1, N = 703) = .101, p = .750 (support offered vs. no support offered), nor for the amount of posts requesting ED-related support from other users, X^2 (1, N = 703) = 1.99, p = .158 (support requested vs. no support requested). Comparing only the 75 cases that offered support, there was no significant difference in the type of support offered between the platforms (i.e., pro-ana, anti-ana/pro-recovery or unclear), X^2 (2, N = 75) = .110, p = 1.

Although the majority of users did not explicitly request or offer support to other users (Table 8.5), it is possible that simply communicating about EDs may be beneficial to self-esteem or emotional wellbeing. Individuals suffering from EDs often experiencing feelings of loneliness, stigmatisation and perceived lack of social support (Laye-Gindhu & Schonert-Reichl, 2005) these platforms may be offering a welcome place of refuge (Rouleau & von Ranson, 2011) and an environment where sufferers can feel free to express their views and opinions without being negatively judged. This alone could be beneficial in terms of increased self-esteem and emotional wellbeing.

8.3.2.5. Raising awareness and challenging norms

Posts were coded according to whether or not they aimed to raise awareness about disordered eating in the wider community, i.e., amongst those who do not personally suffer from an ED. Of the overall sample, excluding missing cases, over 12.5% of posts were aiming to raise awareness (Table 8.5). Between platform comparisons (excluding missing cases) revealed a significant difference in the amount of posts raising awareness, X^2 (1, N = 703) = 4.39, p = .036, φ = .08, RR = 1.53. Tumblr users were 1 ½ times more likely to share a post aimed at raising awareness compared to Twitter users.

Additionally, over 25% of the posts in the overall sample shared content that challenged social pressures regarding physical appearance (including the cultural norm of thinness as beautiful). Excluding missing cases, between platform comparisons revealed a significant difference between the platforms for the amount of posts which challenge social norms, X^2 (1, N = 703) = 58.84, p<.001, φ = .29, RR = 2.95 (Challenged norms vs. did not challenge norms). Again, Tumblr users were more likely to post content challenging norms compared to Twitter users.

This is interesting given the Twitter is generally perceived as the more 'broadcasting' platform, and therefore would perhaps be more suited to awareness raising and challenging norms (section 6.6.1.1). Perhaps Tumblr is being used more than Twitter to

raise awareness by individuals (rather than organisations, refer to section 8.3.1.1) and to raise awareness regarding topics that are not 'mainstream' or for which there is still stigma attached.

8.3.2.6. Expressing humour

Excluding missing and unclear cases (n = 20), 23.2% of the overall sample referred to disordered eating in a context intended to be humourous. As expected based upon the qualitative analysis, between platform comparisons revealed that Twitter users were significantly more likely to use this type of humour compared to Tumblr users, X^2 (1, N = 689) = 9.21, p = .002, φ = .17, RR = 1.53 (humour vs. no humour).

It is possible that gender differences in the platform user group may contribute to these findings. As observed during the qualitative analysis, male users appeared more likely than females to refer to ED in humour. A chi-square test excluding unclear cases reveals a borderline result suggesting that males are over 1 ½ times more likely to refer to ED in humour compared to females, X^2 (1, N = 501) = 3.86, p = .050, φ = .09, RR = 1.58.

8.3.2.7. Reblogging of pro-ana, anti-ana and pro-recovery content

Having identified that there are differences in the type of material shared between the platforms, the next step was to identify if there were differences in the number of times pro-ana, anti-ana or pro-recovery content was reblogged on each platform, i.e., the number of times original pro-ana/anti-ana/pro-recovery posts are re-shared between users using the reblog feature on Tumblr or the retweet feature on Twitter.

Analysing Twitter first and including only those cases that were sharing pro-ana, anti-ana or pro-recovery content, a Kruskal Wallis test initially revealed a significant difference for the number of retweets between the groups, X^2(2, N = 192) = 7.39, p = .025. The mean rank scores were 94.83 for pro-ana, 107.76 for anti-ana and 77.26 for pro-recovery. Post-hoc comparisons using Mann Whitney U tests and applying a Bonferroni adjustment (a = .017) revealed that Twitter users retweeted anti-ana (Mdn = 2, IQR = 16) posts significantly more than pro-recovery posts (Mdn = 1, IQR = 1), U = 966.5, Z = -2.64, p = .008, r = .25. However, excluding humour removed this significant result and no difference in the number of retweets between the groups was found, X^2(2, N = 145) = 3.25, p = .197. No other significant between-group differences were found.

Analysing Tumblr, a Kruskal Wallis test revealed a significant difference for the number of reblogs between the groups, X^2(2, N = 252) = 66.67, p<.001. The mean rank scores were 148.72 for anti-ana, 41.46 for pro-ana, and 111.73 for pro-recovery. Post-hoc comparisons

using Mann Whitney U tests and applying a Bonferroni adjustment (a = .017) revealed that Tumblr users reblogged anti-ana posts (Mdn = 87164, IQR = 162173) significantly more than pro-ana posts (Mdn = 131, IQR = 1083), U = 314.5, Z = -8.44, p<.001, r = .59. Pro-recovery (Mdn = 6296, IQR = 167385) posts were also reblogged significantly more than pro-ana posts, U = 512, Z = -3.07, p = .002, r = .34. Lastly, anti-ana posts were reblogged significantly more than pro-recovery posts, U = 2943.5, Z = -2.71, p = .007, r = .18, however the latter failed to be significant once humour was excluded, U = 2492.5, Z = -.611, p = .541.

Therefore anti-ana and pro-recovery posts are reblogged more than pro-ana on Tumblr. However, no significant differences were found on Twitter.

8.3.3. Who is sharing pro-ana/anti-ana/pro-recovery content?

The previous section identified differences in the type of content shared on each platform (Twitter vs. Tumblr); the following section investigates whether there are user differences in the sharing of pro-ana, anti-ana or pro-recovery content, i.e., are certain types of user more likely to share pro-ana/anti-ana/pro-recovery content compared to other users?

The following analyses include only those posts that contained pro-ana, anti-ana or pro-recovery material (n = 498). Missing and unclear cases are excluded (Table 8.6).

8.3.3.1. Gender

Comparing males (n = 44) and females (n = 312), a chi-square test reveals a significant difference between the genders for the amount of pro-ana, anti-ana and pro-recovery posts, X^2 (2, N = 356) = 9.59, p = .008, φ = .17. Post-hoc comparisons using a Bonferroni adjustment (a = .017) revealed that females are significantly more likely to share pro-ana content than males, X^2 (1, N = 356) = 9.18, p = .002, φ = .16, RR = 3.42 (pro-ana vs. other). No significant difference was found between the genders for the amount of anti-ana posts (anti-ana vs. other), X^2 (1, N = 356) = 2.94, p = .087; nor for the amount of pro-recovery posts, X^2 (1, N = 356) = 2.04, p = .154.

Therefore pro-ana content appears to be proportionately more likely to be shared by female users than males. No gender differences were found for the amount of anti-ana or pro-recovery posts shared (Table 8.6).

8.3.3.2. Age

There were no significant age differences for the type of content shared (pro-ana, anti-ana and pro-recovery), X^2 (4, N = 101) = 3.99, p = .407. Suggesting that fears that pro-ana content is more common amongst younger users may be unfounded (Table 8.6).

8.3.3.3. Anonymity

Excluding unclear and missing cases (n = 80), there was a significant difference between the user anonymity groups (anonymous, partly anonymous and named) for the amount of pro-ana, anti-ana and pro-recovery posts shared, X^2 (4, N = 418) = 12.21, p = .016, φ_c = .17.

The only post-hoc result which reached significance, taking into account the Bonferroni adjustment (a = .006), was between the anti-ana and pro-recovery groups for the number of posts from named users (when excluding humourous posts). Pro-recovery users were more likely to give their full name compared to anti-ana users, X^2 (1, N = 163) = 7.48, p = .006, φ = .22, RR = 2.78. However, named users still remained the minority on both platforms.

One other result neared the adjusted significance level (a = .006) and that was the pro-ana and anti-ana groups for fully anonymous posts, with more pro-ana users showing a tendency to be anonymous compared to anti-ana users, X^2 (1, N = 245) = 7.01, p = .008, φ = .17, RR = 1.14.

No significant differences were found for the number of partly anonymous users sharing pro-ana, anti-ana or pro-recovery content.

8.3.3.4. Originality

There was a significant difference between pro-ana, anti-ana and pro-recovery posts for originality, i.e., whether posts had been created/uploaded by the user rather than a post that had been reshared from another user on the platform via a reblog or retweet, X^2 (2, N = 485) = 46.05, p<.001, φ_c = .31 (excluding 13 unclear and missing cases).

Post-hoc comparisons using a Bonferroni adjustment (a = .017) revealed that anti-ana users shared the least original content (i.e., the most reblogs) compared to both pro-ana users, X^2 (1, N = 399) = 29.64, p<.001, φ = .27, RR = .44, and pro-recovery users, X^2 (1, N = 353) = 34.45, p<.001, φ_c = .31, RR = .39.

There was no significant difference in the amount of original posts for pro-ana and pro-recovery users, X^2 (1, N = 218) = .89, p = .347.

Therefore anti-ana posts appear to be shared by users who see an anti-ana post online and reshare it rather than consciously make an effort to go onto social media and write their own post and opinions about this topic. This is supported by the findings that anti-ana posts are most likely to be shared by users who do not have a blog dedicated heavily to ED related topics (refer to section 8.4.3.7). Whereas, pro-ana and pro-recovery users are

more likely than anti-ana users to use the platforms to voice their own opinions or make their 'voice' heard.

8.3.3.5. References to depression, suicide or SH

There was a significant difference between the groups (pro-ana, anti-ana and pro-recovery) for the amount of blogs which referenced depression, suicide or SH, X^2 (2, N = 408) = 43.53, p<.001, φ_c = .33 (excluding 90 missing cases due to deleted blogs). Post-hoc comparisons using a Bonferroni adjustment (a = .017) revealed that pro-ana users were significantly more likely to have a blog that referenced depression, SH and/or suicide compared to both anti-ana users, X^2 (1, N = 334) = 39.45, p<.001, φ = .34, RR = .48, and pro-recovery users, X^2 (1, N = 178) = 14.04, p<.001, φ = .28, RR = 3.55. There was no significant difference between anti-ana and pro-recovery users, X^2 (1, N = 304) = .5, p = .479.

This link between pro-ana users and references to depression, suicide or SH may be due to ED-sufferers being more likely to experience negative moods including depression (section 6.1), however future research should investigate this link further to ensure that negative mood is not being exacerbated by social media use. Even if social media does not directly impact upon users' mental and emotional wellbeing, it is possible that users viewing and/or sharing pro-ana posts may be more vulnerable or more heavily influenced by the content that they see online due to their current state of mind.

8.3.3.6. Thinness and/or ED as major blog theme

There was a significant difference between the groups (pro-ana, anti-ana and pro-recovery) for the amount of blogs which showed EDs or thinness as a major blog theme, X^2 (2, N = 408) = 121.23, p<.001, φ_c = .55 (excluding 90 missing cases due to deleted blogs). Post-hoc comparisons using a Bonferroni adjustment (a = .017) revealed that pro-ana users were significantly more likely to have a blog with EDs or thinness as a major theme compared to both anti-ana users, X^2 (1, N = 334) = 123.87, p<.001, φ = .61, RR = 17.27, and pro-recovery users, X^2 (1, N = 178) = 5.82, p = .016, φ = .18, RR = 1.5.

There was also a significant difference between anti-ana and pro-recovery users, with the latter more likely to have a blog with ED/thinness as a major theme, X^2 (1, N = 304) = 63.04, p = .479, p<.001, φ = .46, RR = 12.17.

It is possible that pro-ana and pro-recovery users are more likely to have blogs dedicated to EDs as a consequence of ED sufferers preoccupation with diet, weight and other issues relating to their disorder (DSM-5, 2013). However, this could also mean that pro-ana and

pro-recovery users may be more heavily exposed to potentially risky social media content due to heavier ED-related usage (e.g., searching for/sharing/viewing ED related content more frequently than other users) and therefore may be more influenced or affected by the content that they see or share online.

Table 8.6. User and blog characteristics for pro-ana, anti-ana and pro-recovery posts (*n* = 498)

		Pro-ana (*n* = 140)	Anti-ana (*n* = 270)	Pro-recovery (*n* = 88)
Gender	Male	4 (2.9%)	30 (11.1%)	10 (11.4%)
	Female	97 (69.3%)	170 (63%)	45 (51.1%)
	Organisation	0	0	13 (14.8%)
	Unclear	11 (7.9%)	41 (15.2%)	10 (11.4%)
	Missing (deleted blog)	28 (20%)	29 (10.7%)	10 (11.4%)
Age	13 – 17 yrs	13 (9.3%)	26 (9.6%)	7 (8%)
	18 – 24 yrs	12 (8.6%)	34 (12.6%)	7 (8%)
	25 – 27yrs	1 (0.7%)	0	1 (1.1%)
	No age details	114 (81.4%)	210 (77.8%)	73 (83%)
User anonymity	Anonymous	64 (45.7%)	101 (37.4%)	38 (43.2%)
	Partly anonymous (photo)	31 (22.1%)	90 (33.3%)	18 (20.5%)
	Named (full name)	14 (10%)	43 (15.9%)	19 (21.6%)
	Unclear	0	1 (0.4%)	0
	Missing (deleted blog)	31 (22.1%)	35 (13%)	13 (14.8%)
Post originality	Original post	62 (44.3%)	55 (20.4%)	46 (52.3%)
	Reblog/retweet	70 (50%)	212 (78.5%)	40 (45.5%)
	Unclear	1 (0.7%)	1 (0.4%)	0
	Missing (deleted post)	7 (5%)	2 (0.7%)	2 (2.3%)
Blog references to depression, suicide or SH	Yes	35 (25%)	16 (5.9%)	7 (8%)
	No	69 (49.3%)	214 (79.3%)	67 (76.1%)
	Missing (deleted blog)	36 (25.7%)	40 (14.8%)	14 (15.9%)
Thinness and/or ED as a major blog theme	Yes	57 (40.7%)	7 (2.6%)	27 (30.7%)
	No	47 (33.6%)	223 (82.6%)	47 (53.4%)
	Missing (deleted blog)	36 (25.7%)	40 (14.8%)	14 (15.9%)

8.4. Discussion

The current study is the first of its kind to look in detail at ED related content on social media with the aim to identify what type(s) of ED related content is being shared, users' motivations for sharing, and to identify whether there are user differences in the type of content shared. The existing literature identified the need for researchers to move on from investigating traditional websites and internet forums, to investigating social media. Borzekowski et al. (2010) suggested that the greater interactivity afforded by social media platforms may affect how this content is communicated and/or the impact this may have (this may also affect what type of content is communicated and why). Borzekowski et al. also identified that attempts to regulate pro-ana content could not advance without more knowledge on the type of content being shared. This study helped to address these gaps in the knowledge. Previous research has tended to focus upon pro-ana content and not ED content more generally, therefore this study provides a fuller understanding of the type of ED content that is being shared online through the investigation of social media platforms.

The type of content shared on social media shares some similarities with that shared on more traditional ED websites and forums, e.g., thinspiration photos, trigger warnings, content challenging social norms around unrealistic ideals and a mix of pro-ana and pro-recovery content (Borzekowski et al., 2010). Pro-recovery content included messages providing social support and empathy to others suffering from ED. The results question the mass media perception of ED content on social media as purely negative, with positive content being most prevalent across both platforms. Future research is required to investigate whether the social support offered through social media ultimately has a positive or negative effect on the users (Juarascio et al., 2010).

Interestingly, and contrary to research into Web 1.0 pro-ana websites (e.g., Bond, 2012) there was very little evidence of competition amongst the users, for example to be the user who lost the most weight, i.e., the most 'successful ana'. There was also a lack of content showing the 'religious-type quality' found by Bond, i.e., portraying EDs as akin to a religion. This suggests that social media may not feature content as extreme as dedicated pro-ana websites.

Although there was a lack of evidence of direct competition between users, many users did indicate feeling social pressure to conform to the cultural norm of thinness as the ideal. This offers support to previous research which suggests that disordered eating could be caused or exacerbated by cultural pressures that glorify the "perfect body" (Lewinsohn et al., 2002). It is possible that cultural ideals are also being communicated by social media and may affect vulnerable users, for example those suffering low self-esteem (Bond, 2012). Further research is necessary to investigate whether users feel social media is

communicating and/or contributing to these social pressures and/or whether they regard it primarily as a helpful platform through which societal norms can be effectively challenged.

Evidence of pro-ana content was found across both platforms, however this was in the minority and often challenged by other users who disagreed with any glorification of ED behaviour. That said, pro-ana content did include potentially 'triggering' and affective material (e.g., thinspiration) and some did include references to depression and suicidal ideation. Although pro-ana content was in the minority and ED sufferers are likely to experience more negative moods due to the disorder, future research should investigate this link further to ensure that negative mood is not being exacerbated by social media use. Even if social media does not directly impact upon users' mental and emotional wellbeing, it is possible that vulnerable users viewing and/or sharing pro-ana posts may be more influenced by the content that they see online due to their current state of mind.

In an attempt to identify potentially vulnerable user groups, this study investigated individual differences in the users who share particular types of ED content (e.g., pro-ana vs. anti-ana and pro-recovery). More pro-ana content was found from female users. Females were also the predominant users talking about EDs more generally through these platforms. This may be a consequence of the prevalence of EDs being higher amongst females (Fairburn & Harrison, 2003; Hudson et al., 2007; Lewinsohn et al., 2002; Preti et al., 2009; Strong, Williamson, Netemeyer, & Geer, 2000), females being the most predominant users of social media (as found in Study 1, phase 1, section 3.2.1) and/or female users being more likely to use social media to communicate about EDs. Gender differences found in study one (phase 1) suggest that females are more likely to use social media for social reasons and therefore they may be most likely to turn to this platform for support. Further research including interviews with both male and female sufferers may be able to further identify if social media use also plays a role for males with EDs.

No significant age differences were found, questioning the popular media perception that adolescents are responsible for the majority of negative ED-related material shared online (section 6.3). However, it must also be noted that the sample of users who provided age details tended to be within the two youngest age groups (13-17yrs and 18-24yrs) – therefore further research is required determine whether older users are sharing ED related content online and choosing not to reveal their age, or whether the online sharing of ED content *is* an activity dominated by younger users.

There is a lack of research investigating whether particular social media platforms differ in the role they provide for users in relation to communication around ED/SH. This is despite the mass media focusing upon some platforms more than others, e.g., Tumblr has

arguably received some of the most negative press out of the social media platforms due to its link with previous fatalities (section 6.3). Therefore this study used a novel approach by incorporating between platform comparisons to compare Tumblr to another popular social media platform, Twitter. The between platform comparisons did not clearly suggest that one platform was particularly more negative than the other. Positive and negative material was found across both Twitter and Tumblr. For example, although more pro-ana posts were found on the former, the latter featured more thinspiration images.

The current study measured the prevalence of pro-ana, anti-ana and pro-recovery posts. However, it is possible that one platform was sharing more extreme material than the other, e.g., although there was more pro-ana content on Twitter, how did this compare in terms of severity to content on Tumblr? It is surprising to find more pro-ana material on Twitter considering that this platform is generally regarded as more public and therefore less suitable for expressing potentially controversial opinions (section 6.6.1.1). However, due to cultural norms and a degree of social acceptance around striving for thinness (section 8.3.2.5), it is possible that more users felt comfortable to express less extreme 'pro-' opinions upon Twitter. In comparison, it is possible that the pro-ana material present on Tumblr may be of a more extreme nature (therefore shared on the more private platform). This could explain why more thinspiration images and references to depression/suicide were found upon the latter. The qualitative analysis also indicated that Tumblr has a more immediate visual impact upon the user and can appear more 'gloomy' overall. This could link back to the severity of content shared on each platform. It is therefore recommended that future research incorporates a measure of content severity, e.g., mild to extreme pro-ana, anti-ana and pro-recovery rather than relying upon a sole measure of prevalence.

However it is also possible that greater references to depression, suicide and SH on Tumblr are due to users feeling that Tumblr is a more appropriate platform through which to voice sensitive thoughts and private emotions. Interviews with individuals who have recovered, or who are recovering from, EDs and who have previously accessed ED-related social media content could help researchers to further understand the potential impact of online content and identify whether users find some platforms more beneficial/harmful than others.

Although the current research was able to indicate the *type* of ED content that users on each platform where sharing, the data was not able to identify which platform or users were sharing the highest proportion of ED posts. In order to investigate this, future research should include a control group measure of the amount of *non*-ED related posts being shared by each user group (between genders, age groups, platforms etc.). The

researchers will then be able to calculate the amount of ED content being shared by each user group as a proportion of their overall social media posts.

In summary, this study is the first to investigate the types of ED-related posts available on social media and also to incorporate between-platform comparisons between two of the largest social media platforms. The results inspire hope that there are positive elements to communication about ED-related topics on social media and that these platforms may be being used to inspire recovery from ED, to raise awareness of ED in the broader community and/or to challenge societal norms and pressures placed on appearance. In turn, this highlights the need for researchers, policy makers and platform developers to recognise, and account for, the positive aspects of ED-related communication when designing interventions. In doing so interventions can be effectively targeted at the appropriate users and/or posts without disrupting positive social networks or content.

In order to further advance our knowledge of this area future research should include a measure of severity of ED-related content to identify whether the platforms differ in the potential impact that content may have upon users, rather than relying upon the prevalence of this content. Interviews with social media users and ED sufferers could also be beneficial in order to identify what reasons users give for using these platforms and how they describe their experiences of online ED-related communication and the impact they felt that this had in relation to their ED behaviour and/or recovery.

9. Study 3: Communication about self-harm on Twitter and Tumblr

As aforementioned (section 6.6) the following study aims to identify the types of SH content shared on social media. It includes between platform comparisons of Twitter and Tumblr to identify if either platform appears more positive or negative than the other, and identification of any user differences in the type of SH content shared. For full details of the methodology used in this study, please refer back to Chapter 6.

9.1. Qualitative analysis

This section introduces and describes the themes identified by the thematic analysis. The sample consisted of 115 items (65 Tweets and 50 Tumblogs). Of those items were user gender could be identified, 42 were from female users (32 on Twitter, 10 on Tumblr) and 12 from male users (11 on Twitter, 3 on Tumblr). In the interests of preserving user anonymity, all quotes have been paraphrased.

9.1.1. Blog and user characteristics

It was interesting to see that many of the users talking about SH appeared not to have SH as a major theme on their blog. This was found across both platforms and is in contrast to the mass media headlines that portray blogging sites as online worlds dedicated to SH and suicide (e.g., ""15-year-old died in front of a train after being lured into an online world of SH and suicide", Daily Mail, 2012). These findings suggest that users may not find themselves immersed in an online environment dedicated solely to SH. Instead it appears that users may be using their profiles for a range of reasons, of which SH is only part. This observation is tested in the quantitative analysis (section 9.3.1.6).

Tumblr appeared to show a stronger trend for anonymous posts compared to Twitter, this is not unexpected given similar findings from study two (section 8.3.3.3).

References to depression were expected due to the link between SH and severe negative emotion (Gratz, 2003; Paul, Schroeter, Dahme, & Nutzinger, 2002b) and this was found across both platforms. However other disorders such as borderline personality disorder, anxiety and EDs were also mentioned. Borderline personality disorder (BPD) is not unexpected given that, prior to the introduction of the DSM-5, SH was diagnosed as a symptom of BPD rather than as a disorder in its own right. Eating disorders emerged as a strong theme throughout the data, highlighting the high comorbidity rates between EDs and SH (Svirko & Hawton, 2007) and reflecting similar findings from study two (section

8.3.3.5). Some users even described their ED as their form - or one of their forms - of self-harming.

9.1.2. Lack of pro-SH content

None of the posts in the initial qualitative sample (*n* = 111) showed a *pro*-SH theme, i.e., sharing material that appeared to encourage SH behaviour and/or that portrayed SH in a positive or desirable manner. Therefore theoretical sampling was used to selectively sample pro-SH content from both platforms to provide a more comprehensive view of the phenomenon under investigation and to ensure that the themes emerging from the data were not just applicable to *non* pro-SH content.

Of the pro-SH posts that were selectively sampled, one Twitter user's post shared a quote from another user that referred to SH as a form of art: comparing a razor blade to an artist's brush, skin as the canvas and blood representing the paint. Another post (since deleted) encouraged users to post 'SH selfies', i.e., photos of themselves displaying signs of self-harming. Whilst a Tumblr user reblogged a message in 'encouragement' of another user who say that they would share a 'cutting selfie' if they received 20 reblogs.

In addition to links to the users own behaviour, such posts and images could act as 'triggers' for SH in other users. However, some images appeared to be shared for other reasons, such as the desire for support and/or acceptance. For example one user shared an image of a person with cut marks on their arms, wearing a t-shirt saying sex, drugs and rock and roll. This could be potentially triggering and sharing an image of SH could initially be interpreted as pro-SH, however the hashtags associated with the image included #depressed, #sad, #alone, #suicidal therefore it appears possible that the image could represent the release or expression of emotion and/or a cry for help or someone to talk to. None of the hashtags could be interpreted as indicating that SH is a positive thing. Another image showed two hands holding; their wrists both baring the marks of SH. The image contained a quote saying the song line "even if you cannot hear my voice, I'll be right beside you dear". The user had shared it with her own message describing the image as "beautiful". Although this has the potential to portray SH as 'tragically beautiful', the inclusion of the hashtag #alone and the lyrics which represent support, suggest that this may have been shared as a supportive message to those suffering from SH, and/or may have represented the user's own desire for someone to support her. Individuals who SH often report feeling isolated and alone (Laye-Gindhu & Schonert-Reichl, 2005), therefore it is possible that users are using social media as a form of support (as found in study two in relation to ED).

9.1.3. Anti pro-SH content

The analysis revealed that, similar to pro-ana content in study two (section 8.1.2), pro-SH content does not go unchallenged within the Twitter and Tumblr communities. There were posts that expressed a clear resistance towards the pro-SH attitude. This content explicitly challenged the sharing of pro-SH content and expressed concerns that this may encourage or trigger SH behaviour in others. Many of the posts expressed frustration or anger at the glorification of SH behaviour, e.g., one user reminded others that SH is a "serious issue" and requested that people stop exploiting and glorifying it, whilst another user expressed disbelief that people seem "so proud" to SH.

Some users appeared to suggest that SH should not be discussed online in any form, e.g., one user replies to two others to say that SH is an addiction and that they do not agree with the way that they are reminding SH 'addicts' about it; Whilst another echoes these sentiments by saying that "publicising" SH triggers others. However, other users were generally not against online discussions about SH but they did not agree with any content that was pro-SH and/or could be triggering. For example one user explains that they think it is good to talk about SH and that it should not be something that goes hidden. However they did not agree with the sharing of SH images or pro-SH content. This was also echoed by some users who were conducting giveaway competitions on Tumblr and specified in the terms and conditions of the giveaway that the competition was not open to any users with pro-SH or pro-ana blogs.

Other users had a less-supportive attitude and suggested that at least some of the users discussing SH online are just "looking for attention" or wanting to increase the number of responses they get to their posts, e.g., one user states that they are sickened by users who "SH for attention", whilst another jokes that they could pretend that they SH in order to get their name on the trending list (the trending list is a list of the most popular topics currently being discussed on Twitter). Another user tweets angrily about users who pretend to SH or have a terminal disease [presumably in order to gain attention online]. It is not clear whether these users think all users talking about SH online are "looking for attention" or whether they were aiming these comments only at those who they felt were sharing SH related content for the 'wrong' reasons. However, these findings suggest that users talking about SH on social media may not always receive a positive response from other users.

9.1.4. Pro-recovery content

Pro-recovery content was found on both platforms. Two main types of pro-recovery content were evident: 1) Sharing of personal SH recovery achievements, e.g., period of time since they last self-harmed, and 2) Offering and requesting support. These subcategories are discussed in more detail below:

9.1.4.1. Sharing SH recovery achievements

Across both platforms, some users shared their SH recovery achievements, for example the period of time which they have been 'clean' from SH. One user posted a tweet to say that it had been three months since they self-harmed. Another user responded to their post to express happiness at the user's achievement and say that they have a friend who is self-harming and they have sent a screenshot of the original user's message to help them [presumably by showing that recovery is possible and/or they are not alone in their struggles]. Some users appeared to share these posts to highlight their own achievements, i.e., to share the good news, and perhaps motivate their continued recovery and/or elicit supportive messages from others to help them. Other users decided to share their own experiences to offer support to others, for example explaining that they spent years struggling until they achieved their recovery and comforting others by saying that things will get better. This leads us to the next subcategory of pro-recovery content – support offered, and requested.

9.1.4.2. Offering and requesting support

On both platforms, support was offered between users. For example, one user offered support to another by saying she never thought she would SH either [implying that she had also experienced SH] and advising the other user not to let the perceived failure of SH define her future. She urged the user to "stay strong". Other users offered to be there as someone to talk to, for example one user urged a fellow Twitter user to send her a private message as he/she wanted to "talk the user out of SH or suicide".

Support was also expressed through the sharing of positive images and quotes, for example quotes such as "although things may be tough now, they will get better". Other messages were intended to act as a 'sign' to stop SH and/or suicidal behaviour, e.g., "if you are looking for a sign not to harm yourself tonight, this is it". When re-sharing these messages, users sometimes added their own comments expressing how important they regarded the message to be (e.g., stating that it could save the lives of other users) and

encouraging other to also reblog. Some users stated that they would continue to reblog the message every time they saw it on the social media platform.

In addition, other messages took a more 'practical' approach by sharing behavioural alternatives to SH, i.e., behaviours which may satisfy the urge to SH without causing serious bodily harm. Some of the more common techniques include wearing an elastic band around the wrist and 'snapping' it against the skin, or holding a handful of ice for a sustained period of time. Both techniques are painful but should not cause serious bodily harm. If the user is craving the urge to remove scabs then glue or other substances can be applied to the skin and peeled off. Other non-painful techniques include drawing on the body with a marker pen. Whilst other methods include distraction techniques, for example suggesting that the sufferer thinks 'I'll SH if I still want to in 30 minutes" and then repeating this time period until the urge to SH has abated. Users also shared helplines and websites offering help and advice for those in need.

It appears that users find this online support beneficial, with some users expressing that they are grateful for support that they have received. For example one user replied to another's post about alternatives to SH stating that this was exactly what they needed at that point in time. Another user explained that after sharing a supportive post, they received private 'thank you' messages from numerous other users who said that it had also helped them. Similarly, users also *requested* support online, for example one user asked a celebrity what advice they had for individuals currently suffering from SH (refer to section 9.1.6 for discussion of 'fandoms').

The quantitative analysis investigates whether there are differences between the platforms in the amount/type of support offered.

9.1.5. Raising awareness about self-harm

Some posts shared links to media articles and other online content about SH that appeared to represent a motivation to raise awareness about SH amongst those that do not personally suffer with it. This included challenging stigma about SH, and helping friends and family who may know someone displaying symptoms of SH behaviour. Other posts shared research on SH or shared opinions on how it can/should be tackled.

Some users also blogged about the stereotypes and stigma surrounding SH sufferers, e.g., posts stating that not everyone suffering from SH is an 'angsty teenager'. One popular reblog urged users not to judge others by the life that they appear to lead, stating that just because someone has a nice place to live, or does not have financial troubles does not mean that they cannot be depressed or that they won't SH. This was reblogged by more

than one of the users, with one adding their own comment that "people need to be made aware of this".

Posts aimed at raising awareness were found on both platforms, however this appeared to a particularly strong theme on Tumblr, possibly due to the stronger reblogging culture on that platform (as the majority of these posts appeared to be reblogs). This will be tested within the quantitative analysis.

9.1.6. Fandoms and the influence of music and celebrities

Interestingly, some of the posts referenced celebrities, musicians and music, and many of the users appeared to have 'fandom' blogs, i.e., blogs heavily dedicated to celebrities (including musicians, bands and actors) of whom they are fans. Some of the posts suggested that celebrities have helped the users in their own personal struggle with SH. One user simply stated that bands have 'saved her life' from suicide and SH. Another user tweeted that she would like her idols to know that she has been clean from SH for 8 months because of them. While another responded to a trending hashtag asking people to say why they love a particular musician (#ILove[name]Because), the user explained she loves him because he puts a smile on her face and he saved her life as she has "been clean from SH for 1 ½ years because of him".

The users referred to various ways in which they perceived celebrities as helping them to overcome SH. One of which was the celebrity sending a message to them personally to encourage their recovery. For example one female user's biography explained how the female lead singer of her favourite band told her to "keep strong". Other users referred to the celebrity sharing general positive messages to their fans and/or being a positive role model (for example by personally overcoming SH). For instance, Demi Lovato has been famously open about her struggle with EDs and SH and she is often quoted giving positive messages to her fans and encouraging recovery (Coxon, 2011).

Other users perceived positive effects as a consequence of listening to music, e.g., one user tweeted that a particular band "saves her life" because she listens to their music every time she wants to SH and it makes her feel better and stops her from doing it. Therefore, users appeared to suggest that celebrities had helped them to prevent, limit and/or cope with SH. None of the users explicitly suggested that fandoms had a negative effect, i.e., exacerbated or encouraged their SH. One user stated that they were downloading songs about SH and included a list of tracks including the song "hurt", but it is not obvious *why* they were downloading these songs, for example if they were to encourage SH, encourage recovery, release emotion through listening to songs they identify with, or for some other reason.

Some Twitter users tweeted the celebrities directly to ask them for advice on coping with SH. Fandom messages were not solely limited to 'mainstream celebrities' but also included 'online celebrities' such as popular YouTubers or other social media users. One user tweeted a popular YouTuber to say that his video about his life made her cry because she could see similarities between their lives and she stopped self-harming and began a new life because of him.

It was noted that on Twitter, some users would repeatedly send their favourite band/celebrity the same message over and over in what appeared to be an attempt to get a "mention", i.e., wanting the celebrity/band to personally respond to them or mention them in a message or speech. Some users appeared to be pursuing an online 'mention' via the social media platform, whilst others were hoping to be mentioned at an upcoming gig. For example, one user mentioned how she had overcome SH due to her favourite band and she would "never be able to tell them". She repeatedly tweeted this message every few minutes for a prolonged period of time, including the Twitter user account name for an upcoming gig. This would seem to suggest that she was hopeful of a mention or the opportunity to speak to her idols. It is possible that previous mentions from celebrities in relation to fans who SH, may be encouraging messages of this nature and could also be contributing to the view shared by some users that individuals discussing SH online are 'attention seeking' (refer to section 9.1.3).

It was also noted that some Twitter users would tweet celebrities asking them to 'follow' them, i.e., requesting that the celebrity 'follows' their Twitter profile. This would mean that the celebrity would see the user's tweets in their personal Twitter timeline. It also means that other users can see that the user is being followed by the celebrity (by looking at the list of who follows them). It appears that this desire to be followed by celebrities may be motivated by the status of having a celebrity follower, as users who had been successful in being followed by a celebrity would sometimes put this information in the user biography of their Twitter profile, as if to publicise this further to other users.

The use of blogs as 'fandom blogs' and the sharing of 'fandom' messages appeared to be more common on Twitter than Tumblr. This is likely to be due to the nature of the platforms, with celebrities much more likely to have a Twitter account than a Tumblr account. The platforms are compared for the frequency of fandom blogs and messages in the quantitative analysis.

9.1.7. Referring to self-harm in humour (and anger against the use of humour)

It was not uncommon for users to refer to SH in humour. Often the words were used out of context and in a flippant manner. For example one user tweeted that a particular football

manager was enough to “drive him to self-harming”, while another stated that waking up to realise you were [mentioned nationality] could drive you to SH, and another user joked that only having the “top 40 songs” on your iPod is a form of SH. In other instances users joked that they, or their friends, were self-harming if they accidently injured themselves, for example offering a SH helpline number after their friend accidently cut their hand. These posts appeared to be shared by users who did not have any serious mention of SH on their blogs, i.e., they did not appear to be sufferers themselves.

As discussed in relation to the use of ED related humour in study two (section 8.1.3.3), it is an area for debate whether casual use of these terms could have negative consequences for sufferers and/or fuel stigma associated to these ‘labels’. Some users requested that people do not make jokes about SH and/or expressed anger towards those that did. For example one user with a SH-related username angrily tweeted at someone for “making fun” of SH. Whilst another user expressed anger at a popular TV program for making a SH joke.

The use of SH humour was only found on Twitter during the qualitative analysis and, as with humour in relation to ED content (study two, section 8.3.2.6), this appeared to be more common amongst male users. Platform and gender differences will both be tested during the quantitative analysis. This may provide an indication of whether the platforms and/or genders differ in the seriousness of which they refer to SH, e.g., are references to SH on Tumblr of a more serious manner than those on Twitter, which perhaps tend to be mainly ‘off the cuff comments’ rather than an indication of serious communication? Or do comments from males tend to be of a more non-serious, ‘tongue in cheek’ nature compared to posts by females? Measuring humour will also allow non-serious comments to be controlled for during the quantitative analyses to investigate whether the results differ when analysis is restricted to non-humourous content.

9.1.8. Refining the research questions for quantitative analysis

Following the qualitative analysis and in response to the themes emerging from the data, the following research questions were formulated:

1. What types of posts are being shared on each platform?

Three different types of SH-related material were identified by the thematic analysis (i.e., anti-SH, pro-SH, and pro-recovery). Considering that SH related posts differed in their nature and bearing in mind that certain social media platforms have been labelled as risky or ‘toxic’ in the mass media (section 6.3), raises the question whether the platforms differ in the types of posts that users share? Is there any evidence to suggest that one platform is

used more for sharing positive SH content (e.g., anti-SH and pro-recovery) and one for sharing negative SH content (e.g., pro-SH) or are the same types of post found across both platforms? Initial impressions from the qualitative analysis suggest that pro-SH content is likely to be in the minority across both platforms.

2. What motivations do people have for posting SH content on each platform?

The thematic analysis identified several potential reasons for users posting SH-related content online, e.g., expressing emotion, offering and/or seeking support, raising awareness, expressing humour (or challenging it) etc. Therefore the second research question asks whether user motivations differ between the two platforms, for example do more users look for support on one platform compared to the other?

The thematic analysis suggests that humour and references to celebrities and music(ians) may be a stronger theme on Twitter than Tumblr. However, raising awareness around SH appeared to be a stronger theme on Tumblr. Whereas, raising awareness and offering/seeking support appeared to be prevalent on both platforms.

3. Who is sharing pro-SH/anti-SH/pro-recovery content?

The last research question looks at whether there are user differences in the type of content shared, e.g., pro-SH, anti-SH and pro-recovery. Due to small numbers of pro-SH content, this analysis is conducted by collapsing the data across the two platforms.

As pro-SH material is often linked to younger users and female users by the mass media (see section 6.3), age and gender differences will be investigated.

This analysis will also seek to identify if there are differences between the pro-SH/anti-SH/pro-recovery user groups for the following factors, all of which may provide an indication of whether the groups differ in the nature of the effect they may have upon users:

a. User anonymity - as aforementioned (section 6.6.1.1) it has been speculatively suggesting that greater anonymity may be linked to increased negative content and/or consequences (e.g., Harkin, 2013).

b. Originality of content (i.e., original vs. reblogged) – investigating whether users are writing their own posts or re-sharing posts by other users may provide insight into the role that social media play in their lives. For example, previous research suggests that re-sharing can act as a form of self-validation and positive reinforcement (Courtois et al., 2009); both for the original poster, and for the user sharing the material. This may be particularly important for isolated individuals

such as those suffering from SH. Although whether this validation has a positive or negative outcome is still unknown and may be related to the source of the validation (Adams et al., 2005). The qualitative analysis suggests that reblogging may be more prevalent within the pro-SH user groups. In contrast, original posts may suggest that the user is using social media as a platform through which to make their voice heard, for example by anti-SH users to challenging pro-SH views or by pro-recovery users to share their own experiences and recovery.

c. Number of reblogs - Identifying the type of posts attracting the most reblogs/retweets provides an indication of the viewpoints of users on the platform and/or the type of post that receives the most positive reinforcement on these platforms (and therefore potentially has more impact upon users). This will provide an initial measure of whether positive content, such as pro-recovery content, is gaining more attention from users than negative content or vice versa.

d. Blog references to depression/suicide or SH – as discussed during the qualitative analysis (section 9.1), some of the blogs included references to depression and suicidal ideation. Investigating whether references to these subjects differs according to the nature of the users' posts (i.e., pro-SH, anti-SH, pro-recovery) may provide an indication of 'at-risk' user groups. This finding is important irrespective of whether this negative emotion is linked to their social media use.

e. Self-harm as major blog theme – this will indicate the extent to which usage is dominated by communication about SH and may provide an indication to the extent to which SH plays a role in users lives, whether this is for negative reasons (e.g., encouraging SH), or positive reasons (e.g., documenting recovery). Media concerns suggest that pro-SH users will be more preoccupied with SH than others, however the qualitative analysis suggests that this may also be found for pro-recovery users using social media to document and/or support their recovery (section 9.1).

9.2. Developing the coding scheme

The quantitative coding scheme was developed by drawing upon the main themes that emerged from the qualitative data and the research questions that were subsequently formulated. Mutually exclusive codes were created using the methodology explained in Chapter 7. Table 9.1 provides a summary of the coding scheme and results of the inter-rater reliability tests (refer to Appendix E for full coding scheme). Age and location were coded if supplied in the users' profiles. The number of retweets/reblogs was also recorded.

Table 9.1. Summary of coding scheme used for the quantitative analysis. Reliability analysis, *n* = 90.

Code	Description	Levels	Kappa
Gender	Whether the user was male, female or from an organisation (e.g., charity or business)	Unclear / Male / Female / Organisation	.715
Anonymous	Whether the user is anonymous (no full name provided), partly anonymous (identifiable photo but no full name provided) or not anonymous (full name provided).	Unclear / Anonymous / Partly Anonymous / Not Anonymous	.734
SH major theme	Whether SH-related material was a major theme on the user's blog. Pro-SH/anti-SH/pro-recovery judgment based upon an overall evaluation of the most prominent theme on the blog.	Pro-SH / Anti-SH / Pro-recovery / Yes, but type unclear / SH not a major theme	1.00
Blog reference to depression/suicide	Whether the blog expressed depressive feelings and/or suicidal feelings. This did not need to be explicit; it could be implied by the type of content blogged.	Yes / No	1.00
Blog reference to ED	Whether the blog features content that suggests the user has, or has had, an ED or struggled with associated feelings.	Yes / No / Unclear	.880
Fandom blog	Whether celebrities/musicians feature as a major theme on the user's blog.	Yes / No	.727
Original post (vs. retweet)	Whether the post was original, i.e., written by the user	Yes / No / Unclear	.739
Pro-SH, Anti-SH or pro-recovery post	Whether the post expressed a pro-SH, anti-SH or pro-recovery attitude or behaviour.	Unclear/ Pro-SH / Anti-SH / Pro-recovery	.813
Post sharing SH experience	Whether the post is providing insight into the experience of suffering from SH (e.g., what it feels like, effects on their lives, having to hide the condition etc.).	Yes / No / Unclear	.732

Post includes SH images: Pro-SH vs. Anti-SH/Pro-recovery	Whether the post shared SH images and whether these images were of a pro-SH or anti-SH/pro-recovery nature.	Yes, neither/unclear purpose / Yes, pro-SH images / Yes, anti-SH (including pro-recovery) images / No images	1.00
Post references user's own SH	Whether the user references their own personal SH in their post.	Unclear / Yes, in relation to their recovery (or desire to recover) / Yes, but not in relation to recovery / No	.733
Emotion expressed	The emotion expressed by the user by writing or reblogging the post.	Negative / Positive / Mixed / No emotion	.734
Support offered in post	Whether support was offered to other users in the post and whether this was of a negative pro-SH or positive anti-SH/pro-recovery nature.	Yes, unclear purpose / Yes, pro-SH / Yes, anti-SH (incl. pro-recovery) / No	.745
Support requested in post	Whether support was requested from other users in the post and whether this was of a negative pro-SH or positive anti-SH/pro-recovery nature.	Yes, unclear purpose / Yes, pro-SH / Yes, anti-SH (incl. pro-recovery) / No	1.00
Raising awareness about SH in others	Whether the post was sharing content that appeared to aim to raise awareness of issues around SH in others (i.e., general population, friends and family).	Yes / No	.728
Reference to celebrity/music influence in post	Whether the user refers to their SH behaviour being influenced by celebrities/musicians, and whether this reduced or increased their SH behaviour.	Unclear / Yes, unclear relationship to SH / Yes, lessened SH / Yes, increased SH / No, not referencing celebrities/music	.733
SH-referenced in humour	Whether the post referred to SH in a humourous manner.	Yes / No / Unclear	1.00
Post against the use of SH humour	Whether the post is used to express a dislike of others referring to SH in a humourous manner.	Yes / No / Unclear	1.00

9.3. Quantitative analysis

9.3.1. Sample demographics and blog/post characteristics

From the original data set, a random sample of 868 posts and blogs were selected for the quantitative analysis; 111 were excluded due to being spam, not relevant to SH (e.g., matching search terms but not relating to SH) or in a non-English language. Only posts and blogs which were public, i.e., openly accessible, were used for the data collection. However, within the 7 month period from data collection to data analysis (data collection June 2014, data analysis January 2015), 254 of these cases deleted their blog and/or post or changed their privacy settings so that the items were no longer publically accessible - this meant that the original item could no longer be accessed online. For the majority of these cases, some coding was still possible using the data captured during the initial data collection. However for 17 of the deleted cases there was not enough data captured to allow any coding to take place; therefore these 17 cases were excluded from the sample.

The final sample consists of 740 cases, split equally between the two platforms. Power analyses using G*Power (Faul et al., 2007) with power (1 - β) set at 0.80 and $\alpha = .05$, indicate that this sample size is sufficient to detect an effect size of .11-.12; a small effect size (Cohen, 1992 provides a guideline of .10 for a small effect size and .30 for a medium effect size).

Table 9.2 displays the status of the post at the time of data analysis, i.e. whether the post was:

1. Still accessible - i.e., still openly/publically visible on the platform.
2. Had been made private - i.e., only viewable to those whom the user pre-approved.
3. Had since been deleted/moved.

The table also shows whether the deleted and private items could be fully coded, i.e., whether both the blog and post were coded or whether only partial coding was possible, i.e., coding only the blog *or* the post. The 'deleted' figures include posts/blogs where the user was shown as suspended ($n = 11$, occurred on Twitter only) and those which stated that the user had moved to a new blog ($n = 22$, across both platforms). Some users created a new profile page/username and left their old blog either with a message stating the website URL of their new blog, or sometimes simply writing 'moved' with no indication as to where to find their new profile

Table 9.2. Sample demographics and blog/post characteristics

			Twitter (*n* = 370)	Tumblr (*n* = 370)
Post & Blog Status	Still present & fully coded		263 (71.1%)	240 (64.9%)
	Post and/or blog made private since original collection**	Only blog coded	0	0
		Only post coded	2 (0.5%)	1 (0.3%)
		Fully coded (blog and post coded)	9 (2.4%)	0
	Post and/or blog deleted/moved since collection:**	Only blog coded	5 (1.4%)	6 (1.6%)
		Only post coded	59 (15.9%)	114 (30.8%)
		Fully coded (blog and post coded)	32 (8.6%)	9 (2.4%)
Gender	Male**		49 (13.2%)	16 (4.3%)
	Female		218 (58.9%)	173 (46.8%)
	Organisation		10 (2.7%)	0
	Unclear***		45 (12.2%)	68 (18.4%)
	Missing (deleted blog)		48 (13%)	113 (30.5%)
Age	13 – 17yrs		13 (3.5%)	33 (8.9%)
	18 – 24yrs		11 (3%)	34 (9.2%)
	25 – 27yrs		0	2 (0.5%)
	28yrs +		0	2 (0.5%)
	M (*SD*)*		18.79yrs (4.09yrs)	16.96 (2.26yrs)
	Age not available		346 (93.5%)	299 (80.8%)
Location	USA		46 (12.4%)	20 (5.4%)
	UK[b]		29 (7.8%)	4 (1.1%)

	Canada	4 (1.1%)	6 (1.6%)
	Other (countries <1% of sample)	19 (5.1%)	14 (3.8%)
	Location not available	272 (73.5%)	326 (88.1%)
Anonymity	Anonymous***	112 (30.3%)	158 (42.7%)
	Partly anonymous (photo)	133 (35.9%)	93 (25.1%)
	Named (full name)***	61 (16.5%)	6 (1.6%)
	Missing (deleted blog)	64 (17.3%)	113 (30.5%)
Original post vs. reblog	Original post***	304 (82.2%)	21 (5.7%)
	Reblog/retweet***	30 (8.1%)	338 (91.4%)
	Unclear	31 (8.4%)	4 (1.1%)
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
References to depression/suicide	Yes	52 (14.1%)	38 (10.3%)
	No	244 (65.9%)	217 (58.6%)
	Missing (deleted blog)	74 (20%)	115 (31.1%)
References to ED	Yes	19 (5.1%)	12 (3.2%)
	No	277 (74.9%)	243 (65.7%)
	Missing (deleted blog)	74 (20%)	115 (31.1%)
Fandom blog	Yes***	87 (23.5%)	23 (6.2%)
	No ***	210 (56.8%)	231 (62.4%)
	Missing (deleted blog)	73 (19.7%)	116 (31.6%)

Note: Significant post-hoc chi-square results indicated, *** $p<.001$, ** $p<.01$, * $p<.05$, ^{b} = borderline ($p<.06$)

A chi-square test revealed a significant effect of platform on post status (present, deleted or private), X^2 (2, N = 740) = 14.23, p = .001, φ_c = .14. Post-hoc comparisons using a Bonferroni adjustment (a = .017) show a significant difference in the amount of deleted posts across the two platforms, X^2 (1, N = 740) = 6.96, p = .008, φ = .10. Users on Tumblr are almost 3 times more likely to have deleted posts than users on Twitter (RR = 2.83). There was also a significant difference in the number of posts/blogs that have been made private by users across the two platforms, X^2 (1, N = 740) = 8.47, p = .004, φ = .11, RR = 5.17. Users on Twitter were 10 times more likely to make their posts private (RR = 10). However it should be noted that occurrences of private blogs/posts were very low within the overall sample (n = 12) and there was only one occurrence on Tumblr. It is possible that the greater anonymity afforded by Tumblr makes users less likely to feel the need to make their posts private. Whereas on Twitter, the user's anonymity is usually more grounded within reality and therefore they may feel the need to restrict who can see their SH-related posts (refer to section 6.6.1.1).

As discussed in relation to the previous study, deleted and/or private posts could potentially indicate regret over the content posted (section 8.1.3.4). However, there was no significant difference between the pro-SH, anti-SH and pro-recovery posts in relation to post status, i.e., whether the post was still publically accessible or whether it had been made private or deleted, X^2 (4, N = 453) = 5.16, p = .254 (excl. unclear cases). Therefore it does not appear that users experience 'regret' over posting one type of content compared to the others (refer to Table 9.3). This echoes the findings from study two that also found no difference between post type and rate of deletion.

Table 9.3. Post status according to content type, i.e., pro-SH, anti-SH and pro-recovery.

	Pro-SH (n = 15)	Anti-SH (n = 106)	Pro-recovery (n = 332)
Present	11 (73.3%)	71 (67%)	219 (66%)
Private	0	4 (3.8%)	3 (0.9%)
Deleted	4 (26.7%)	31 (29.2%)	110 (33.1%)

9.3.1.1. Gender

User gender was coded for just over 78% (n = 579) of the sample. The remaining cases were not coded due to the blogs being deleted and no gender information being captured by the initial data collection. Gender was coded as male, female, organisation or unclear – the latter for anonymous blogs containing no gender identifying information (Table 9.2).

Almost 53% of the items were posted by female users (n = 391) and just under 9% were posted by male users (n = 65). There was a significant overall effect of gender on the platform used to communicate about SH, X^2 (3, N = 579) = 29.69, p<.001, φ_c = .23.

Post-hoc comparisons using a Bonferroni adjustment (a =.013) show significantly more SH related posts from male users on Twitter than Tumblr, X^2 (1, N = 579) = 11.6, p = .001, φ = .14, RR = 2.5 (male vs. other). This echoes the findings from study two that also found more male users talking about EDs on Twitter (section 8.3.1.1). However user gender could not be identified for over 15% of the cases in the sample (n = 113). Similarly to study two, there were significantly more posts from users with an unclear gender on Tumblr than on Twitter, X^2 (1, N = 579) = 14.18, p = <.001, φ = .16, RR = 1.89 (unclear vs. other). With the gender of Tumblr users almost twice as likely to be unclear compared to Twitter users. This is in keeping with previous findings that Tumblr users tend to show a greater degree of anonymity. Therefore it is not possible to establish whether the greater number of males on Twitter (compared to Tumblr) represents a genuine gender difference, or if this is due to male users on Tumblr being more likely to be anonymous. As previously discussed during the qualitative analysis (section 9.1.7) males on Twitter appeared to be more likely to be referencing SH in a non-serious/humourous manner. Therefore it is possible that males wishing to talk about SH in a more sensitive context may opt to anonymously use Tumblr (section 6.6.1.1). This will be investigated further in section 9.3.2.7: 'Expressing and challenging SH-related humour'.

There was no significant difference between the platforms in the amount of SH related posts from females, X^2 (1, N = 579) = .921, p = .921 (females vs. other).

Organisations were the minority of the sample accounting for only 10 cases (1.4%); all of which were found on Twitter. Again, this echoes the findings from study two and reflects the greater adoption of Twitter as a broadcasting and networking platform compared to the more personal blogging platform offered by Tumblr (refer to section 6.6.1 to recap how the platforms differ).

9.3.1.2. Age

Age was provided by just over 12.7% of the sample (n = 95. Table 9.2). Of those users who provided their age, the majority were ≤27 years with only two users specifying an age above this (30 and 41 years old respectively). A chi-square test between the age groups (using a Monte Carlo adjustment due to >20% of the cells having an expected count <5) showed no significant age group differences between the platforms, X^2 (3, N = 95) = 1.59, p = .732. However, there was a significant difference in the mean age across both platforms, t(93) = 2.06, p = .042; with Tumblr users (M = 16.96yrs, SD = 2.26yrs) younger on average

than Twitter users (*M* = 18.79yrs, *SD* = 4.09yrs). This is in keeping with previous research that suggests that Tumblr has one of the youngest user demographics of any of the social media platforms ("Global Web Index Social Report," 2014).

9.3.1.3. Location

Location information was not available for 80.7% (*n* = 597) of the sample, due to this information either not being provided by the users and/or the blog being deleted since the original data collection. Of those who *did* provide location details (*n* = 143) the majority were from the USA, followed by the UK and Canada (see Table 9.2), any other specified countries accounted for <1% of the sample. Comparing the UK, USA and Canada revealed a significant difference on location between the platforms, $X^2(2, N = 109) = 9.47$, $p = .009$. However, this did not reach significance in post hoc tests using a Bonferroni adjustment ($a = .017$) although the difference between the platforms for UK users neared the adjusted significance level, $X^2(2, N = 109) = 5.63$, $p = .018$ with more UK users on Twitter than Tumblr.

9.3.1.4. User anonymity

The anonymity of users was significantly affected by platform choice (excl. deleted and unclear cases) X^2 (2, $N = 563$) = 56.23, $p<.001$, $\varphi_c = .32$ (Table 9.2). Post hoc comparisons using a Bonferroni adjustment ($a = .017$) show that users on Tumblr were more than 1 ½ times more likely to be anonymous (anonymous vs. other) than users on Twitter, X^2 (1, $N = 563$) = 34.64, $p<.001$, $\varphi = .25$, RR = 1.66. In contrast, Twitter users were 10 times more likely to use their full name compared to Tumblr users, X^2 (1, $N = 563$) = 41.27, $p<.001$, $\varphi = .27$, RR = 10 (named vs. other). This echoes the findings from study two (section 8.3.1.4) and is in keeping with previous research (e.g., Marwick & boyd, 2010) which has shown that Twitter is largely used as a broadcast medium where a lack of anonymity is the 'norm'; whereas Tumblr tends to be used more anonymously by users and screen names/aliases are more common (section 6.6.1.1).

Many users chose to be partly anonymous, i.e., sharing an identifiable photograph but not their full name; there were no significant differences in the number of partly anonymous users across both platforms, X^2 (1, $N = 563$) = 3.08, $p = .08$ (partly anonymous vs. other).

9.3.1.5. Post originality

Almost 50% of the posts were a reblog/retweet (*n* = 368), i.e., many users were re-sharing content that already existed on the platforms rather than uploading original content that

they had personally written/created (Table 9.2). Excluding deleted and unclear cases, there was a significant effect of platform on post originality, with Twitter users over 15 times more likely to share original content compared to Tumblr users who shared more reblogs, X^2 (1, N = 693) = 165.14, p<.001, φ = .85, RR = 15.17. This echoes the findings from study two (section 8.3.3.4) and suggests that users on Twitter may be more likely to use the platform as a medium to make their own opinions heard. As Twitter has generally been regarded as a more public broadcasting medium (compared to the more private Tumblr platform, refer to section 6.6.1.1), it would appear logical that users wishing to make their 'voice heard' would opt for Twitter.

It has also been suggested that the re-sharing of content may represent a form of self-validation and positive feedback and may be tied to users well-being in isolated user groups (Adams et al., 2005); This will be discussed further in the Discussion section (9.4).

9.3.1.6. Blog references to depression and/or suicide

Over 12% of the blogs within the sample referenced depression and/or suicide (n = 90. Table 9.2). There were no differences in blogs referencing depression/suicide between the platforms, X^2 (1, N = 551) = .712, p = .399 (excluding missing cases). This suggests that neither platform is linked to users expressing greater depressive and/or suicidal feelings or thoughts. This differs from the findings in study two that found that Tumblr users were more likely to reference depression, suicide *or SH*. However it is possible that the findings from study two were mainly capturing references to SH.

9.3.1.7. Blog references to EDs

Of the total sample, 4.19% of the blogs referenced EDs (n = 31. Table 9.2), a degree of comorbidity was expected given previous research that suggests a high comorbidity rate between the behaviours (Conterio & Lader, 1999; Favazza & Rosenthal, 1993; Rosenthal, Rinzler, Wallsh, & Klausner, 1972). There were no differences in blogs referencing EDs between the platforms, X^2 (1, N = 551) = .757, p = .84 (excluding missing cases).

9.3.1.8. Fandom blog

Of the total sample 14.9% (n = 110) of blogs were 'fandom blogs' (blogs where celebrities/musicians feature as a major theme). A chi-square test excluding unclear and missing cases, revealed a significant difference between the platforms, X^2 (1, N = 551) = 35.09, p<.001, φ = .25, RR = 102.5, with many more fandom blogs on Twitter (Table 9.2) as predicted by the qualitative analysis (section 9.1.6).

9.3.1.9. Self-harm posts as a major blog theme

The user blogs on each platform were analysed for whether they showed SH as a major theme, i.e., whether the user had numerous posts about SH on their blog, to the extent where it seems to be the main, or one of the main, topics being shared by the user. Blogs with SH as a major theme were in the minority, only accounting for 4.5% of the blogs in the sample (n = 33). A chi-square test excluding unclear and missing cases, revealed a significant difference between the platforms, X^2 (1, N = 547) = 8.86, p = .003, φ = .13, RR = 3.46, with more SH-dedicated blogs on Twitter (Table 9.2).

Those blogs that did show SH as a major theme, were categorised based upon an overall evaluation of the most prominent theme, i.e. pro-SH, anti-SH or pro-recovery. Table 9.4 summaries the results of this analysis. With the exception of a single case, the SH-dedicated blogs all displayed a pro-recovery stance. This suggests that users do not generally use these platforms with the intention of promoting/encouraging SH. Those who do use Twitter and Tumblr primarily to share SH content, do so to encourage recovery (whether in themselves and/or others).

There were no anti-SH blogs on the platforms suggesting that those users who share content against the glorification of SH, do so on a less regular basis, i.e., this is not one of their main reasons for using Twitter or Tumblr.

Table 9.4. Between platform comparisons of SH as a major blog theme.

	Twitter (n = 370)	Tumblr (n = 370)
Pro-SH	1 (0.3%)	0
Anti-SH	0	0
Pro-recovery	14 (3.8%)	2 (0.5%)
SH dedicated blog but theme unclear	11 (3%)	5 (1.4%)
N/A - SH not a major blog theme	268 (72.4%)	246 (66.5%)
Missing (deleted blog)	76 (20.5%)	116 (31.4%)

9.3.2. What types of posts are being shared on each platform?

Having identified differences in user demographics and blog characteristics across the two platforms, analysis now focuses upon the specific posts captured by the data collection. The following analyses identify whether there are differences in the type of SH content being shared on each platform.

Some of these posts appeared to be shared in humour (n = 30, 6.6%); therefore in order to account for those comments which may have been said in a 'tongue in cheek' manner, the

analyses were also conducted with humourous posts excluded (three posts coded as 'unclear' for humour were also excluded) and any instances where this affected the significance or nature of the results is noted in the following sections.

9.3.2.1. Sharing pro-SH, anti-SH and pro-recovery posts

Overall, 453 cases (61.2%) included pro-SH, anti-SH or pro-recovery content. The majority of these posts were pro-recovery (n = 332) with over three times as many posts as anti-SH (n = 106), whilst pro-SH posts only accounted for 15 cases (Table 9.5). Interestingly, this differs from the results of study two, which found pro-recovery posts were in the minority. This suggests that whilst users talking about ED tend to move away from talking about ED during recovery (perhaps due to fears of being triggered), those in recovery from SH seem to find social media helpful, perhaps finding that the social support and/or use of social media as a 'progress diary' is greater than the risk of being triggered. This is something that could be investigated in future research.

The results suggest that users are primarily sharing SH-related content for positive reasons, i.e., to encourage recovery in themselves and/or others and to challenge any glorification or encouragement of SH behaviour. In turn, indicating that fears over the social media content actively encouraging SH may be largely unfounded.

In comparison to study two, pro-SH content is considerably less prevalent than pro-ana content. This is likely to be due to SH behaviour being less socially accepted than dieting and the pursuit of thinness (refer to section 8.1.2.3 regarding challenging social norms around thinness as the ideal). Again this could represent one of the reasons why users in recovery for ED may move away from social media due to fears of being triggered by pro-ana content (or due to constraints imposed by friends, family or health professionals due to similar fears).

There was a significant effect of platform upon the type of content shared, X^2 (2, N = 453) = 23.78, p<.001, φ_c = .23. Post hoc comparisons using a Bonferroni adjustment (a =.017) show significantly more anti-SH material on Twitter compared to Tumblr, X^2 (1, N = 453) = 16.91, p<.001, φ = .19, RR = 2 (anti-SH vs. other). Twitter is often thought of as a broadcasting medium more suited to making your 'voice heard', therefore this could explain why users sharing anti-SH content are more likely to do so via this platform than via Tumblr (section 6.6.1.1).In contrast, there was significantly more pro-recovery content on Tumblr than on Twitter, X^2 (1, N = 453) = 23.23, p<.001 (pro-recovery vs. other), this may be due to Tumblr being perceived as more suitable for sensitive topics (section 6.6.1.1) and due to the platform format allowing users to create a more effective online 'diary' of progress (e.g., Tumblr allows easier access to posts by month/year compared to

Twitters continuous timeline). Alternatively, this could be related to Tumblr's stronger reblogging culture (as found in study 2, section 8.3.1.5 and analysed again in relation to SH in section 9.3.1.5). Overall, pro-recovery content is reblogged more frequently than anti-SH content across both platforms. This is likely due to many users regarding pro-recovery content as of high importance and accrediting it as 'potentially lifesaving' (refer to section 9.1.4.2). Therefore the stronger reblogging culture on Tumblr could contribute to the greater amount of pro-recovery content on that platform.

There was no significant difference in the amount of pro-SH content between the platforms, X^2 (1, N = 453) = 4.79, p = .029 (pro-SH vs. other), which as previously mentioned accounted for the minority of posts (n = 15).

9.3.2.2. SH images

Posts containing SH images (i.e., images of SH on the body) were in the minority, accounting for only 3.2% of the overall sample (Table 9.5), this challenges views in the popular press about frequent sharing of SH photos (section 6.3). There were no significant differences in the amount of SH images between the two platforms (excl. missing cases), X^2 (1, N = 728) = 2.80, p = .094.

The posts which *did* include SH images were coded according to whether the images appeared to be shared as pro-SH, anti-SH/pro-recovery, or whether the reason for sharing was unclear. However, due to the small sample size (e.g., only 3 pro-SH cases), between-platform differences in the type of SH image shared were not tested.

9.3.2.3. Expressing emotion

Posts were coded according to whether the user appeared to be expressing positive emotion, negative emotion, mixed emotion (i.e., positive *and* negative), or no emotion at all (refer to Table 9.5). The majority of posts did not express any emotion (n = 514). Of the 197 cases that *did* express emotion (excl. unclear cases), the most common emotion was negative – which is not surprising given this is an analysis of users talking about SH. However, more importantly there was no significant difference in the type of emotion expressed between the platforms, X^2 (2, N = 197) = 2.23, p = .328. Emotion could be a potential indicator of user well-being; therefore the results suggest that neither platform may be more negative than the other in relation to the well-being of users (whether due to differences in user groups, or a potential effect of the platform).

Table 9.5. Between group comparisons of user motivations for sharing pro-SH, anti-SH and pro-recovery content

		Twitter (*n* = 370)	Tumblr (*n* = 370)
Sharing pro-SH, anti-SH or pro-recovery content	Pro-SH	10 (2.7%)	5 (1.4%)
	Anti-SH	60 (16.2%)	46 (12.4%)
	Pro-recovery	109 (29.5%)	223 (60.3%)
	Neither or unclear if pro-SH/anti-SH or pro-recovery	186 (50.3%)	89 (24.1%)
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Sharing SH images	Image shared, unclear purpose	5 (1.4%)	5 (1.4%)
	Pro-SH image	2 (0.5%)	1 (0.3%)
	Anti-SH/Pro-recovery image	1 (0.3%)	10 (2.7%)
	No image shared	357 (96.5%)	247 (93.8%)
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Expressing emotion	Negative	107 (28.9%)	41 (11.1%)
	Positive	26 (7%)	17 (4.6%)
	Mixed (negative and positive emotion)	4 (1.1%)	2 (0.5%)
	No emotion expressed	215 (58.1%)	299 (80.8%)
	Unclear	13 (3.5%)	4 (1.1%)
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Offering support	Support offered – pro-SH	0	1 (0.3%)
	Support offered – anti-SH and/or pro-recovery	49 (13.2%)	224 (60.5%)
	Support offered – unclear purpose	5 (1.4%)	1 (0.3%)
	No support offered	311 (84.1%)	137 (37%)

	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Requesting support	Support requested – pro-SH	0	0
	Support requested – anti-SH and/or pro-recovery	5 (1.4%)	1 (0.3%)
	Support requested – unclear purpose	1 (0.3%)	2 (0.5%)
	No	359 (97%)	360 (97.3%)
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Raising awareness about SH in others	Yes	57 (15.4%)	142 (38.4%)
	No	300 (81.1%)	218 (58.9%)
	Unclear	8 (2.2%)	3 (0.8%)
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Expressing celebrity/music influence	Yes, helps improve their SH	14 (3.8%)	3 (0.8%)
	Yes, worsens their SH	0	0
	Unclear	8 (2.2%)	0
	No (not referring to celebrity/music)	343 (92.7%)	360 (97.3%)
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Expressing SH related humour	Yes	30 (8.1%)	0
	No	332 (89.7%)	363 (98.1%)
	Unclear	3 (0.8%)	0
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Challenging/against SH related humour	Yes	36 (9.7%)	3 (0.8%)
	No	328 (88.6%)	360 (97.3%)

	Unclear	1 (0.3%)	0
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Sharing/Expressing the experience of SH	Yes	40 (10.8%)	37 (10%)
	No	324 (87.6%)	326 (88.1%)
	Unclear	1 (0.3%)	0
	Missing (deleted post)	5 (1.4%)	7 (1.9%)
Making reference to own SH	Yes, in relation to recovery	54 (14.6%)	6 (6.1%)
	Yes, but not in relation to recovery	22 (5.9%)	3 (0.8%)
	Yes, Unclear if relating to recovery or not	16 (4.3%)	3 (0.8%)
	No	260 (70.3%)	340 (91.9%)
	Unclear	13 (3.5%)	11 (3%)
	Missing (deleted post)	5 (1.4%)	7 (1.9%)

9.3.2.4. Offering and requesting support

Overall, 37.8% of users (n = 273, excl. unclear cases) were offering support to others (Table 9.5). With the exception of one pro-SH case, all supported posts were offering support of an anti-SH/pro-recovery nature (refer to section 9.1.4.2 for an explanation of the type of support offered). This suggests that support available on these platforms is generally of a positive nature rather than the negative pro-SH nature that fuels public concern (section 6.3).

Although both platforms were sharing the same *type* of support, there was a significant difference in the *amount* of supportive posts on each platform (excl. missing cases), X^2 (1, N = 728) = 173.23, p<.001, φ_c = .49, RR = 4.15. Tumblr posts were more than 4 times more likely to offer support than Twitter posts (support offered vs. no support offered). This suggests that Tumblr may be a more supportive environment than Twitter for users talking about SH.

Although help was offered to *other* users, users appeared to seldom explicitly request help and support for themselves. There were only nine instances of support being requested, six of which were of an anti-SH/pro-recovery nature. The purpose of the remaining three were unclear. This suggests that users are not *explicitly* asking for help from others, however they may still be finding support through the content shared by other users or through the social connections provided by talking about SH on social media.

9.3.2.5. Raising awareness

Posts were coded according to whether or not they aimed to raise awareness about SH in the wider community, i.e., amongst those who do not personally engage in SH behaviour. This included posts aimed at addressing society's views and understanding about SH and also posts which aimed to help friends and families of those who suffer from SH.

Excluding missing and unclear cases (n = 23), almost 28% of the posts were aiming to raise awareness (Table 9.5). Between platform comparisons revealed a significant difference in the amount of posts raising awareness, X^2 (1, N = 717) = 49.28, p<.001, φ = .26, RR = 2.47; Tumblr users were almost 2 ½ times more likely to share a post aimed at raising awareness compared to Twitter users. This is interesting given the Twitter is generally perceived as the more 'broadcasting' platform, and therefore would perhaps be more suited to awareness raising (section 6.6.1.1). However, many of the posts that included awareness raising content, also included support for the users engaging in SH themselves (e.g., a list of helplines for those suffering from SH would often be

accompanied by some helplines or websites to advise friends and family if they suspect they know someone who is self-harming), X^2 (1, N = 717) = 16.25, p<.001, φ = .15, RR = 1.5. Posts raising awareness were 1.5 times more likely to also offer support (compared to posts not raising awareness). Therefore it is possible that the primary aim of these posts was still to offer support to others (or receive self-validation through others agreeing with the users opinions) rather than to challenge stereotypes and public opinion in the broader community. That aside, it is important to note that greater awareness raising was also found on Tumblr for study two in relation to ED and there was no significant difference in the amount of supportive posts on Twitter and Tumblr in relation to ED posts (section 8.3.2.4). Therefore this raises questions over the aforementioned explanation, and suggests that Tumblr is being more widely used to raise awareness of these issues. Perhaps Tumblr is being used more than Twitter by individuals (rather than organisations, see section 9.3.1.1) to raise awareness regarding topics that are not 'mainstream' or for which there is still stigma attached. This may be due to users feeling that Tumblr is a more supportive atmosphere for discussing these topics and this in turn leads to greater awareness raising due to more users using that platform to talk about ED/SH in general.

9.3.2.6. Expressing influence of celebrities/music(ians) in relation to SH

Of the overall sample, 2.3% made direct reference to their SH behaviour being positively influenced by celebrities (including internet celebrities) or music/musicians. Users credited celebrities/music(ians) with helping to reduce their SH behaviour and/or inspiring recovery (Table 9.5). Considering the presence of fandoms and references to celebrities observed during the qualitative analysis (section 9.1.6), 2.3% seems like a low percentage of cases. However, it is important to remember that this is reliant upon the user mentioning the celebrity within the single post captured by the data collection, and therefore should be taken into consideration with the results from the overall blog which showed that over 14% of blogs were 'fandom blogs' (Table 9.6).

Excluding missing and unclear cases, there were significantly more celebrity/music(ian) references found on Twitter than Tumblr, X^2 (1, N = 720) = 7.48, p = .006, φ = .10, RR = 5. This supports the predictions made following the qualitative analysis (see section 9.1.8) and is also in keeping with the platforms wider spread adoption from celebrities themselves; therefore allowing users to send messages to and/or 'follow' the celebrities in question (refer to section 9.1.6).

9.3.2.7. Expressing and challenging SH-related humour

Excluding missing and unclear cases (n = 15), 4.1% of the sample referred to SH in a context intended to be humourous. However, as predicted following the qualitative analysis (section 9.1.8) all instances (n = 30) were found on Twitter. There was no sharing of SH related humour on Tumblr (Table 9.5).

Some posts challenged the use of SH-related humour (n = 39). There were significantly more of these *anti*-humour posts on Twitter than Tumblr, X^2 (1, N = 727) = 29.41, p<.001, φ = .20, RR = 12.5. This is to be expected since Twitter was also the platform were SH-related humour was observed.

It is possible that gender differences in the platform user group may contribute to these findings. As observed during the qualitative analysis, male users appeared more likely than females to refer to SH in humour (section 9.1.7). A chi-square test excluding unclear cases reveals that males are almost 4 ½ times more likely to refer to SH in humour, X^2 (1, N = 444) = 33.49, p<.001, φ = .28, RR = 4.33. These findings echo those from the study two (section 8.3.2.6).

9.3.2.8. Sharing/expressing the experience of SH, and referencing own SH

Excluding missing and unclear cases, over 10% of the sample appeared to be sharing content providing insight into the 'experience' of suffering from SH (e.g., what it feels like, the effects it has/had on their lives, having to hide the condition etc.). There were no differences between the platforms for content of this nature, X^2 (1, N = 727) = .122, p = .727 (Table 9.5).

Some users also mentioned their own personal SH. Excluding missing and unclear cases, there was a significant difference between the platforms for users who referenced their own SH, X^2 (1, N = 704) = 72.21, p<.001, φ = .32, RR = 8. This was 8 times more common on Twitter than Tumblr. This is interesting bearing in mind that Tumblr was predicted to be the platform more suitable for discussing sensitive topics (section 6.6.1.1). However, it is worth noting that these users were mostly referring to their SH in relation to recovery, X^2 (1, N = 85) = 14.41, p<.001.

Comparing only those users who *did* reference their own SH (n = 104), revealed no significant differences between the platforms for the context of these references (i.e., whether the reference was made in relation to recovery (N = 60), not in relation to recovery (N = 25) or for an unclear purpose (N = 19), X^2 (2, N = 104) = .481, p = .711.

9.3.2.9. Reblogging of pro-SH, anti-SH and pro-recovery content

Having identified differences in the type of content shared between the platforms, the next step was to identify if there are differences in the number of times pro-SH, anti-SH or pro-recovery content was reblogged on each platform, i.e., the number of times original pro-SH/anti-SH/pro-recovery posts are re-shared between users using the reblog feature on Tumblr or the retweet feature on Twitter (Table 9.6).

Analysing Twitter first and including only those cases that were sharing pro-SH, anti-SH or pro-recovery content (i.e., excluding missing or unclear cases), a Kruskal Wallis test using a Monte Carlo correction (due to >20% of the cells having an expected count <5) initially revealed a significant difference for the number of retweets between the groups, X^2 (2, N = 136) = 5.81, p = .049. The mean rank scores were 50.86 for pro-SH, 64.44 for pro-recovery and 78.82 for anti-SH. However, excluding posts containing SH-related humour, the difference between the groups was no longer significant, X^2 (2, N = 131) = 4.72, p = .094.

Removing missing and unclear cases when analysing the Tumblr data revealed only 3 cases for pro-SH content, therefore this category was excluded from the analysis. A Mann Whitney U test revealed a significant difference between the amount of anti-SH and pro-recovery content, U = 3576.50, Z = -2.946, p = .003 (excluding humour does not affect the significance of this result). This is potentially a consequence of Tumblr being a more supportive environment for SH sufferers and/or Tumblr users being more likely to use the platform to offer support compared to Twitter users (as discussed in section 9.3.2.4), therefore users are most likely to reblog pro-recovery content which often includes support and advice which some users in the qualitative analysis described as 'potentially lifesaving' (section 9.1.4.2).

9.3.3. Who is sharing pro-SH/anti-SH/pro-recovery content?

The previous section identified differences in the type of content shared on each platform (Twitter vs. Tumblr); the following section investigates whether there are user differences in the sharing of pro-SH, anti-SH or pro-recovery content, i.e., are certain types of user more likely to share pro-SH/anti-SH/pro-recovery content compared to other users?

The following analyses include only those posts containing pro-SH, anti-SH or pro-recovery material (n = 400). Missing and unclear cases are excluded (Table 9.6).

9.3.3.1. Gender

Comparing males (n = 30) and females (n = 226), a chi-square test reveals no significant difference between the genders for the amount of pro-SH, anti-SH and pro-recovery posts (excluding missing and unclear cases), X^2 (2, N = 256) = 1.75, p = .417. Excluding humour does not affect the significance of this result. Suggesting that the genders do not differ in their purpose for using these social media platforms to communicate about SH.

9.3.3.2. Age

There were no significant age group differences for the type of content shared (pro-SH, anti-SH and pro-recovery), X^2 (6, N = 59) = 5.10, p = .531 (excluding missing cases). Suggesting that fears that pro-SH content is more common amongst younger users may be unfounded.

9.3.3.3. Anonymity

There was no significant difference between the user anonymity groups (anonymous, partly anonymous and named) for the amount of pro-SH, anti-SH and pro-recovery posts shared, X^2 (4, N = 330) = 2.51, p = .649 (excl. unclear and missing cases). Suggesting that greater anonymity is not necessarily associated with more negative posts, i.e., pro-SH. However it has to be noted that pro-SH posts were in the minority within this study and the same may not apply to other internet domains such as dedicated SH websites.

9.3.3.4. Originality

There was a significant difference between pro-SH, anti-SH and pro-recovery posts for originality, i.e., whether posts had been created/uploaded by the user rather than a post that had been re-shared from another user on the platform via a reblog or retweet, X^2 (2, N = 430) = 10.77, p = .005, φ_c = .16 (excluding unclear cases).

Post-hoc comparisons using a Bonferroni adjustment (a = .017) revealed that pro-recovery users share significantly more original content compared to anti-SH users, X^2 (1, N = 416) = 10.33, p = .001, φ = .16, RR = 1.57. This may suggest that anti-SH posts are most likely to be shared by users who may not necessarily be sufferers themselves and may just share these posts as they encounter them during their general social media use.

Re-sharing may be explained by users perceiving these posts as 'important' and potentially lifesaving (as discussed in relation to study two, section 8.3.3.4).

In comparison, pro-recovery users may be more likely to use the platforms more purposefully to voice their own opinions and/or experiences (section 9.1.4).

There was no significant difference in the amount of original posts for pro-SH and anti-SH users, X^2 (1, N = 111) = .102, p = .749, nor between pro-SH and pro-recovery, X^2 (1, N = 333) = 1.09, p = .373.

9.3.3.5. References to depression and/or suicide

There was a significant difference between the groups (pro-SH, anti-SH and pro-recovery) for the amount of users who referenced depression and/or suicide on their blogs, X^2 (2, N = 323) = 16.57, p<.001, φ = .23 (excluding unclear and missing cases). Post-hoc comparisons using a Bonferroni adjustment (a = .017) revealed a significant difference in the amount of posts referencing depression/suicide between the pro-SH and anti-SH groups, X^2 (1, N = 87) = 8.80, p = .009, φ = .32, RR = 6.32, and also between the pro-SH and pro-recovery groups, X^2 (1, N = 247) = 16.87, p = .001, φ = .26, RR = 9.23. Users sharing pro-SH posts were between 6- 9 ½ times more likely to also make reference to feeling depressed and/or suicidal compared to the anti-SH and pro-recovery groups.

There was no significant difference between the anti-SH and Pro-Recovery groups, X^2 (1, N = 312) = .99, p = .319 (Table 9.6)

These findings echo those from study two (section 8.3.3.5). This link between pro-SH posts and references to depression and suicide may be due to SH-sufferers being more likely to experience negative moods including depression (section 6.2), however future research should investigate this link further to ensure that negative mood is not being exacerbated by social media use. Even if social media does not directly impact upon users' mental and emotional wellbeing, it is possible that users viewing and/or sharing pro-ana posts may be more vulnerable or more heavily influenced by the content that they see online due to their current state of mind. Future research may wish to investigate the possibility of interventions that target users sharing pro-mentality posts to identify the most vulnerable users.

9.3.3.6. References to EDs

There was a significant difference between the groups (pro-SH, anti-SH and pro-recovery) for the amount of blogs which referenced EDs, X^2 (2, N = 323) = 7.08, p = .027, φ = .15. (excl. missing cases. Refer to table 9.6). However, post-hoc comparisons using a Bonferroni adjustment (a = .017) revealed no significant difference between the groups: Pro-SH and Anti-SH groups, X^2 (1, N = 87) = 1.75, p = .214; Pro-SH and Pro-Recovery

groups, X^2 (1, N = 247) = 6.93, p = .055; Anti-SH and Pro-Recovery groups, X^2 (1, N = 312) = 2.03, p = .173. Excluding cases that contained humour did not affect the significance of the results.

9.3.3.7. Fandom blogs

Excluding unclear and missing cases, there was no significant difference between the groups (pro-SH, anti-SH and pro-recovery) for the amount of fandom blogs (12.3 – 15.1%), X^2 (2, N = 323) = .622, p = .733. Refer to Table 9.6.

9.3.3.8. SH as major blog theme

Excluding unclear and missing cases, there was no significant difference between the groups (pro-SH, anti-SH and pro-recovery) for the amount of blogs which showed SH as a major blog theme, X^2 (2, N = 322) = 3.39, p = .173 (SH major theme vs. SH not major theme. Refer to Table 9.6). Suggesting that users sharing pro-SH content are no more likely to have a SH-dedicated blog than other users. Again questioning the perception of Twitter and Tumblr as embroiling users in a dark, SH-dedicated world (section 6.3).

It is worth noting that SH dedicated blogs were in the minority within this sample (n = 14, 3.1%). Considerably less than the 18.27% (n = 91) of ED dedicated blogs study two (section 8.3.3.6). This is discussed further in the general discussion (Chapter 10).

9.3.3.9. Making reference to own SH

Comparing the pro-SH and pro-recovery users (excluding missing and unclear cases), revealed that pro-SH users were much more likely to reference their own SH than pro-recovery users, X^2 (1, N = 120) = 39.55, p<.001, φ = .57, RR = 4.41 (Table 9.6).

Table 9.6. User and blog characteristics for pro-SH, anti-SH and pro-recovery posts (*n* = 453)

		Pro-SH (*n* = 15)	Anti-SH (*n* = 106)	Pro-recovery (*n* = 332)
Gender	Male	1 (6.7%)	11 (10.4%)	18 (5.4%)
	Female	6 (40%)	58 (54.7%)	162 (48.8%)
	Organisation	0	0	4 (1.2%)
	Unclear	4 (26.7%)	15 (14.2%)	59 (17.8%)
	Missing (deleted blog)	4 (26.7%)	22 (20.8%)	89 (26.8%)
Age	13 – 17yrs	0	5 (4.7%)	20 (6%)
	18 – 24yrs	1 (6.7%)	8 (7.5%)	22 (6.6%)
	25 – 27yrs	0	0	2 (0.6%)
	28yrs +	0	1 (0.9%)	0
	No age details	14 (93.3%)	92 (86.8%)	288 (86.7%)
User anonymity	Anonymous	5 (33.3%)	36 (34%)	123 (37%)
	Partly anonymous (photo)	6 (40%)	36 (34%)	95 (28.6%)
	Named (full name)	0	8 (7.5%)	21 (6.3%)
	Missing (deleted blog)	4 (26.7%)	26 (24.5%)	93 (28%)
Post originality	Original post	6 (40%)	46 (43.4%)	95 (28.6%)
	Reblog/retweet	8 (53.3%)	51 (48.1%)	224 (67.5%)
	Unclear	1 (6.7%)	9 (8.5%)	1 (3.9%)
References to depression or suicide	Yes	6 (40%)	12 (11.3%)	27 (8.1%)
	No	5 (33.3%)	64 (60.4%)	209 (63%)
	Missing (deleted blog)	4 (26.7%)	30 (28.3%)	96 (28.9%)
Fandom blog	Yes	2 (13.3%)	13 (12.3%)	50 (15.1%)
	No	9 (60%)	63 (59.4%)	186 (56%)
	Missing (deleted blog)	4 (26.7%)	30 (28.3%)	96 (28.9%)
SH major blog theme	Yes	2 (13.3%)	5 (4.7%)	7 (2.1%)
	No	9 (60%)	71 (67%)	229 (69%)
	Missing (deleted blog)	4 (26.7%)	30 (28.3%)	96 (28.9%)
References own SH	Yes, in relation to recovery	2 (13.3%)	1 (0.9%)	43 (13%)
	Yes, not in relation to recovery	3 (20%)	0	3 (0.9%)
	Yes, unclear if relating to recovery	1 (6.7%)	0	1 (0.3%)
	No	8 (53.3%)	105 (99.1%)	281 (84.6%)
	Unclear	1 (6.7%)	0	4 (1.2%)

9.4. Discussion

The current study is the first of its kind to look in detail at SH related content on social media with the aim to identify what type(s) of SH related content is being shared, users' motivations for sharing and to identify whether there are user differences in the type of content shared. Previous research has tended to focus upon Web 1.0 websites (Daine et al., 2013; Harris & Roberts, 2013), this study provides a fuller understanding of the type of SH content that is being shared online through the investigation of social media platforms.

The results show that there is a positive element to the discussion of SH-related posts on social media with the sharing of pro-recovery and supportive posts. Positive posts were more common than pro-SH posts aiming to encourage negative behaviours. Users appeared to be sharing SH content to: encourage recovery in themselves and/or others, provide social support and empathy to others suffering from SH, and raising awareness about SH in the wider population. Similar to findings from Prasad and Owens (2001) during their meta-search of SH websites, this study also found positive content included discussed alternative behaviours to SH (e.g., drawing on the skin with a marker pen) and providing contact details for helplines and organisations.

Self-harm dedicated blogs were in the minority, and those that did exist tended to be of a positive, pro-recovery nature. As with the ED communities investigated in study two, social support appeared to be one of the central components of SH communities. This supports previous research by Heath (2013) who found that YouTube is used as a platform for users to share their SH stories with an understanding audience. Future research should seek to identify whether this support is ultimately helpful in the long-term or if it reinforces ties to the SH community and reinforces the SH identity (Harris & Roberts, 2013).

In contrast to previous research into SH websites (e.g., Adler & Adler, 2012), there was no evidence found of extreme attitudes portraying SH as a voluntary life choice and encouraging users not to regard it as a negative behaviour. There was very little evidence of pro-SH content across both platforms. In fact, the majority of users recognised that there were negative aspects to their behaviour even if they still actively engaged in SH; this made it difficult to code many items as explicitly *pro*-SH even if the user showed some signs of supporting the behaviour. Many of the SH posts displayed a combination of wanting to SH and also being driven to the behaviour by negative and unwanted emotions, circumstances or thoughts – this dichotomy making it impossible to code as purely 'pro' in nature. This was also found by Lewis et al. (2011) who coded SH videos on YouTube but despite finding many that included pro-SH components, e.g., showing live SH behaviour,

they only managed to code 7% as fully *pro*-SH in mentality due to the videos also including recognition of the negative aspects of the behaviour.

These findings suggest that SH content on social media platforms may not be as extreme as on dedicated SH websites. This could be due to the presence of users outside of the SH community implying perceived social norms, policing of the networks by moderators, administrators and other users, and/or links to offline contacts within the real world (refer to section 6.6.1.2: 'An expression of self: The portrayal of the self-concept on Tumblr versus the context collapse of Twitter').

Users who *did* share pro-SH posts tended to reference depression more than other users. This is not surprising given that SH is intrinsically linked to negative emotion (section 6.2), however future research should investigate this link further to ensure that negative mood is not being exacerbated by social media use.

In an attempt to identify potentially vulnerable user groups, the study investigated individual differences in the users who share particular types of SH content (e.g., pro-SH vs. anti-SH and pro-recovery). However, no significant age or gender differences were found.

Previous research had not investigated whether particular social media platforms differ in the role that they provide for users. This is despite the mass media focusing on some platforms more than others, e.g., Tumblr has arguably received some of the most negative press out of the social media platforms due to its link with previous fatalities (see section 7.6.1). Therefore this study used a novel approach by incorporating between platform comparisons to compare Tumblr to another popular social media platform, Twitter. The between platform comparisons show that both platforms appear to be mainly positive. Social support is a big component of SH communities across both Twitter and Tumblr, although even more support was evident upon the latter (although this may largely be due to a stronger reblogging culture). Interestingly, users did not tend to explicitly ask for support from others – suggesting that users gain benefits from using these platforms in other ways such as documenting their own progress or accessing supportive messages that is offered to users more generally rather than explicitly typing a call for help. Perhaps the most noticeable difference is that Tumblr users were more likely to share pro-recovery content than Twitter users who showed more anti-SH content. This is likely explained by differences in the general usage of the platforms; Tumblr users may be more likely to use their blog as a 'diary' of their pro-recovery progress, whereas Twitter is more generally used for sharing original posts broadcasting the user's opinion.

Overall, the findings suggest that social media play a positive role for the majority of users sharing SH related posts. Therefore careful consideration is required before any

interventions are introduced which may have the potential to impact upon positive connections or behaviours. Interviews with individuals who have recovered (or who are recovering from) SH and who have previously accessed SH social media content could help researchers to further understand the potential impact of online SH communities (including whether the online support offered by these communities ultimately appears to be beneficial in the long term).

Although the current research was able to indicate the *type* of SH content that users on each platform where sharing, the data was not able to identify which platform or users were sharing the highest proportion of SH posts. In order to investigate this, future research should include a control group measure of the amount of *non*-SH related posts being shared by each user group (between genders, age groups, platforms etc.). The researchers will then be able to calculate the amount of SH content being shared by each user group as a proportion of their overall social media posts.

In summary, this study is the first to investigate the types of SH-related posts available on two of the largest social media applications, Twitter and Tumblr. The results inspire hope that there are positive elements to communication about SH-related topics and that these platforms may be being used to inspire recovery from SH and to raise awareness of SH in the broader community. This study highlights the urgent need for researchers, policy makers and platform developers to recognise the positive elements of online SH-related communication and to account for these when designing interventions. In doing so interventions can be effectively targeted at the appropriate users and/or posts without disrupting positive social networks or content.

10. General Discussion

The studies within this thesis provide a fresh look at social media use including user attitudes towards, and engagement in, online behaviours that are often portrayed by the media as risky. Amongst the first to investigate these behaviours since the arrival of Web 2.0, this research incorporated novel data sources and methodologies to bring the existing knowledge up to date with current technologies and challenge some of the misconceptions portrayed by the mass media:

Phase 1 (studies 1a-1c) used a large-scale international, online survey to collect data from a wide range of social media users. Whereas previous studies have tended to focus primarily upon adolescents due to the influence of media speculation and 'panic' (such as that identified by Livingstone, 2008), Phase 1 builds upon the existing literature by including a wide age range (13-80yrs) to establish whether similar patterns of behaviour are found across adult users.

Users were recruited from across all types of social media rather than restricted to pre-specified platforms (e.g., Tow et al., 2010; Tufekci, 2007); therefore providing a more complete overview of online behaviour. In addition this phase incorporates one of the first studies to investigate the existence of a link between content that users view online and their offline behaviour. Therefore providing the first steps to investigating whether there appears to be any basis to justify concerns over the potential influence of online content.

Phase 2 (studies 2 & 3) helps to bring ED/SH research forward into the era of social media. In comparison to pre-Web 2.0 research which focuses upon dedicated ED/SH specific websites (e.g., Borzekowski et al., 2010; Giles, 2006; Murray et al., 2006; Smithson et al., 2011), studying social media allows investigation of *general* online communication around these behaviours. ED/SH topic-specific websites may contain more extreme or polarised views, compared to general 'everyday' communication on non-topic-specific platforms. In addition, communication was not restricted to *pro*-ED/SH content but to all references to ED/SH (a need identified by Juarascio et al., 2010).

The use of real social media data (over 85,000 tweets and blogs) provides a novel contribution to the existing literature and ensures that the themes identified during analysis emerged from the data itself rather than a-priori hypotheses or predictions; creating a novel, data-driven description of ED/SH communities on Twitter and Tumblr. This insight is particularly valuable given the lack of pre-existing research in this area.

The mixed-methods approach expands upon the limited literature by enhancing rich qualitative description of ED/SH content with empirical testing for differences. The latter of which is not included in many existing studies (e.g., Juarascio et al (2010).

10.1. Findings, implications and future directions

10.1.1. Key finding 1: Younger users and females use social media most intensely, but older users intensity is based upon a more rationalised decision-making process (Study 1a)

Younger users and female users were shown to be the most intensive users of social media. Age differences were partially explained by younger users perceiving stronger descriptive and subjective social norms and reporting higher computer literacy. Whilst, gender differences were partially explained by females experiencing stronger descriptive norms and more positive outcomes. These factors mediated usage partially through their effect upon the users' perceived benefit vs. perceived risk.

Age and gender differences in platform choice, reasons for social media use and online activities suggest that younger users and females users are more likely to use social media as a form of social enhancement (enhancing existing offline relationships); whereas older users and male users are more likely to use social media as a form of social compensation (creating new online connections) and/or for utilitarian reasons, i.e., as a means to an end rather than simply for social interaction.

Although younger users use social media more intensely, moderation analysis revealed that older users intensity of use appears to be based upon a more rationalised decision making process. This process is based upon number of positive experiences, perceived control and perceived benefits (benefit-risk difference). Whilst these factors had a positive relationship with usage for *both* age groups, they had a stronger effect for older users. This suggests that older users may place more importance upon the degree to which social media use is beneficial (positive experiences, perceived benefits) and the degree to which risk can be controlled (perceived control). In comparison, younger users may continue to use social media for other reasons such as social norms.

As a large amount of variance was still unaccounted for, further research should seek to investigate other factors that help explain differences in intensity outside of cost-benefit analysis. Possible research avenues include accounting for less rationalised and more reactive pathways such as that proposed by the Prototype Willingness Model (Gerrard et al., 2008).

The age and gender differences identified by this research may have implications for future interventions. For example, interventions aimed at reducing excessive usage may need to incorporate different factors according to whether the target population includes younger or older users.

10.1.2. Key finding 2: Willingness to engage in online risk behaviour is affected by attitudes towards risk takers, norms and past behaviour (Study 1b).

The Prototype Willingness Model (PWM) was found to have value when explaining a wide range of online risk behaviours. This expands upon the previous literature which has shown a tendency to limit application of the model to the offline environment (e.g., Hukkelberg & Dykstra, 2009; Myklestad & Rise, 2007) or restricted its application to only one type of behaviour, e.g., sexual communication (Baumgartner, Sumter, Peter, & Valkenburg, 2012).

The model was designed for use in adolescents and therefore existing research has largely restricted its application to this age group. However, this study demonstrated that the PWM increases the explained variance above that explained by the Theory of Reasoned Action (and past behaviour), across *both* younger and older users (13-80yrs), therefore suggesting that researchers should not limit its application solely to adolescents.

Future research should seek to identify other factors which could further improve the variance explained by the model. In addition, the results identified 'prototype likeability' (i.e., how favourably individuals judge others who engage in the behaviour) as the main predictive factor, and raised questions over the predictive ability of 'prototype similarity' and 'descriptive norms'. Future research should seek to investigate this further by using a wider range of online behaviours to identify the value of the latter factors in relation to this area of research. Research by Gerrard et al. (2008) suggests that prototypes of abstainer prototypes (i.e., the risk-*avoider* – someone who does *not* engage in the behaviour) may improve the model rather than relying solely on risk-*taker* prototypes, therefore future research may wish to evaluate the inclusion of this factor.

Implications include wider application of the PWM and the potential to develop a new, improved model for explaining risk taking behaviour in the online environment.

10.1.3. Key finding 3: There is a significant relationship between content viewed online and offline risk taking behaviour. Younger users do not appear more vulnerable than older users (Study 1c)

One of the most common media and governmental concerns around social media is whether a link exists between online exposure to risky content and users own risky behaviour. However there has been very little research in this area (refer to Chapter 1). This research provided a novel, preliminary step towards investigating these concerns. A strong positive relationship was found between content that users view online and their own offline behaviour. However, it is not possible to determine causality at this stage and

these findings should not be taken as justification for media panic. Studies should seek to identify whether viewing of online content appears to precede, coincide with or follow the viewers' offline risk behaviour –an area particularly suited to longitudinal studies. In addition, future research may wish to distinguish between content that participants' actively search for and content that they were unintentionally exposed to through their general social media use. This may help to further explain the mechanisms underpinning the link between online content and offline behaviour, for example whether content is having an effect upon general, 'everyday' users of social media or whether the affected users are specifically seeking out risk information therefore suggesting pre-existing motivation (and possibly risk behaviour) prior to accessing the content.

A stronger relationship between online content and offline behaviour was found for males, suggesting that there may be a gender difference in the effect of online content and/or users' tendency to view content associated with their behaviour. Future research is also needed to establish the mechanisms behind this gender difference. Implications include identifying whether males are more vulnerable to potentially negative effects of social media and potential protective factors underlying gender differences in vulnerability. Interestingly, the results revealed a *negative* relationship between exposure to online bullying content and offline bullying behaviour for female users. This suggests that social media may have a positive influence in this scenario, potentially through increasing awareness and feelings of empathy (refer to section 5.3). Again, the mechanisms behind this relationship are currently unknown and provide an area for future research. Implications include the potential design of interventions to limit negative effects of online risk content and increase potential positive effects (such as decreasing negative offline behaviour).

Interestingly and contrary to media speculation, there were no significant age differences in the strength of the relationship between risk content viewed online and offline risk behaviour, suggesting that younger users may be no more vulnerable to the effects of online content than their older counterparts. This challenges the popular media view of younger users as the primary user group being 'led astray' by the content that they see online and suggests that media headlines may be misleading (e.g., " 'Thinspiration' sites are fuelling teens' eating disorders" O'Regan, 2014). Future research into online risk behaviour should seek to include broader age ranges within their samples and not make assumptions that adolescents will necessarily be at greater risk than older users.

10.1.4. Key finding 5: Care is needed to ensure that interventions respect the positive side of social media use and limit risks without disrupting potentially positive social networks (Studies 2 & 3).

Phase 2 demonstrates that online communication around ED/SH may play a positive role for the majority of users. Therefore challenging the demonised view of social media within the popular press (refer to section 6.3). The findings provide a novel, in-depth investigation of general, 'everyday' online communication around ED/SH, compared to existing studies limited to pro-mentality communication or dedicated-ED/SH groups or Web 1.0 websites. Whilst previous Web 1.0 research has found evidence of positive aspects of ED/SH communication, this is often counteracted by negative and/or pro-mentality posts (e.g., Brotsky & Giles, 2007; Mantella, 2007; Tong et al., 2013; Yeshua-Katz & Martins, 2012). In contrast, the current research found less evidence of negative and pro-mentality content. This suggests that social media may generally provide a less 'extreme' environment compared to dedicated ED/SH websites (as also found by Juarascio et al., 2010, despite the researchers looking solely at *pro*-ana content during their research). This may be due to the greater presence of non-ED sufferers, potentially reducing the severity of shared content and minimising the group polarisation of views. There may also be individual differences between ED/SH sufferers who choose to use traditional websites and those who use social media. Future research could seek to identify any user differences, such as differences in motivation, e.g., whether the user is seeking recovery or seeking information for less positive reasons.

Social support appears to be the main motivation for the sharing of ED/SH content on social media. This could be beneficial to users' well-being (Csipke & Horne, 2007) particularly as individuals suffering from ED/SH often report feelings of social isolation (Laye-Gindhu & Schonert-Reichl, 2005). However it is important to note concerns over the source of external validation that may be received online (e.g., Adams et al., 2005; Juarascio et al., 2010). Adams et al. expressed concern that external validation may be detrimental if it is being received from other sufferers as this could potentially exacerbate the behaviour and or strengthen its role as part of the individual's self-identity. Therefore further research should prioritise investigating whether online support is beneficial or detrimental, both in the short and long-term. There was evidence of a link between *pro*-mentality content and references to depression. Negative moods are often experienced due to the disorders themselves, however researchers should investigate this link further to ensure that negative mood is not being exacerbated by social media use for these users. Even if social media does not directly impact upon users' mental and emotional wellbeing, it is possible that vulnerable users may be more influenced by the content that they see

online due to their current state of mind. Interviews and focus group with users who suffer (or have previously suffered) with ED/SH and who access (or have previously accessed) social media may provide some insight into the effects that they feel this has/had upon their behaviour and the types of content that they found beneficial and/or detrimental.

Whilst both ED and SH users shared posts conveying a pro-recovery stance, this was more prevalent within the SH community. The lower prevalence of pro-recovery posts perhaps suggests that ED users tend to move away from these platforms during their recovery. This could be indicative of fears of being triggered (see 8.1.3.2) or reaching the conclusion that their usage is not helping their recovery. Alternatively it could indicate that the platforms have simply fulfilled their role for the user (i.e., helping them to begin their road to recovery), or it could be due to restriction from friends, family and medical professionals. Again, this illustrates the need for further research to establish the role these platforms play in relation to providing a beneficial or detrimental influence (and whether this differs between the disorders). At present, the current findings suggest that it would be advisable to proceed with caution when considering censorship and/or access restriction to social media, to ensure that potentially valuable social connections are not lost and to minimise further distress to the user(s).

This research provides the first step towards greater understanding of the benefits and risks of communicating about ED/SH on social media and forms a solid basis for further research to build. Implications include potentially challenging incorrect media assumptions and portrayals, therefore helping to address media induced panic. Further implications include the potential to educate users, the general population, policy makers, platform developers and ED/SH service providers - in turn potentially influencing the design of future interventions, guidelines and support.

This research may have value within the delivery of health-care services. Favazza (1996) and McAllister (2003) suggest that health care professionals should expand their focus beyond simply treating individuals suffering from ED/SH to also enhancing their social situation, for example by helping to build positive social sources of support. As the findings suggest that social media is intrinsically linked to social support, these platforms may provide a vehicle through which to improve feelings of support within these traditionally isolated populations. Individuals with ED/SH are often hard to identify and rarely seek treatment on their own initiative (Whitlock et al., 2006; Vivekananda, 2000). It is possible that social media platforms may provide a useful vehicle to help health professionals reach these populations. Any platform that provides a method through which users can find positive help and guidance, and/or which provides a gateway through which health professionals can reach vulnerable individuals should not be

underestimated. However, further research is required to investigate the potential effectiveness of using these approaches. For example, previous studies have warned that the presence of unwelcome or 'out-group' users within an online community (e.g., the presence of pro-recovery users or health care professionals within pro-ana communities) can have a counterproductive effect and reinforce the negative behaviour (see Yom-Tov, Fernandez-Luque, Weber, & Crain, 2012) or strengthen the resistance to outsiders and foster a sense of shared goals and beliefs between the users (Giles, 2006); therefore any intervention ideas and designs must proceed with caution.

The results also suggest that some users appear to be using social media to raise awareness about ED/SH (refer to sections 8.4 & 9.4). McAllister (2003) argues that society needs to encourage the disclosure of SH and that in order to achieve this society needs to view SH from a more social perspective, i.e., something that can occur to an otherwise healthy individual due to a response to social factors rather than an individual with a medical disorder. Social media may have the potential to help reduce stigma associated with these disorders. Future research could investigate the effectiveness of awareness raising posts and also the potential for organised health campaigns delivered through these platforms. Again heeding the cautions previously discussed regarding ensuring against counterproductive effects (Yom-Tov et al., 2012).

10.1.5. Males appear less likely to use social media to discuss ED and SH (Studies 2 & 3)

The findings indicate that male users do not appear to use social media to communicate about ED and SH, apart from in a humourous manner (refer to sections 8.1.3.3 & 9.3.2.7). This could link to the findings from Study 1, which indicates that females are more likely to use social media platforms for social reasons, whereas males are more likely to use them for trolling and/or entertainment (refer to Study 1, section 3.2.4). Alternatively males discussing ED/SH in a serious manner may be more likely to be anonymous, and therefore excluded from the gender analyses. Future research may wish to investigate gender differences in the use of social media to communicate about ED/SH. In doing so, studies should aim to identify whether males do or do not use these platforms to communicate seriously about these behaviours; and if not, what other sources they are using for support (if any). This could have important implications in relation to the design of future interventions and/or sources of support for sufferers (e.g., an online intervention may be more appropriate for female users but may have the potential to place male users at a disadvantage if they do not use the internet and/or social media in this manner).

10.2. Summary

Collectively the studies within this thesis provide one of the most comprehensive investigations into social media use and links to risk behaviour, using data sources and methodologies that are novel to the field. The results challenge the polarised views of the popular press, and highlight potential benefits of social media use in addition to the potential risks. Further research is required to establish the magnitude of both respectively. The results also suggest that research should broaden its horizons and not restrict focus solely to age groups and/or genders that receive the most media attention and/or which have been more traditionally associated with risk, but instead should expand research to encompass social media users more generally.

The findings inspire hope that social media may be being used for good including inspiring recovery, raising awareness and/or challenging damaging cultural norms. Whilst a strong social support element suggests that hasty censorship, access restriction or inadequately researched interventions could have a detrimental effect on users. Together these findings highlight the need for researchers, policy makers and platform developers to proceed with caution when designing interventions aimed at limiting risky behaviour. Future interventions should aim to help users stay connected to *beneficial* sources of support, whilst limiting any material that may act as a setback to their recovery and protecting against any counterproductive effects that may occur as a consequence of the intervention being introduced.

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Appendices

Appendix A: Social Media Survey (Study 1, phases 1-3)

You are invited to take part in a study investigating Social Media use. For the purpose of this research, Social Media refers to social networking websites and digital applications that enable people, identified by user profiles, to share information. This information can be in the form of 'statuses', messages, news, data, images, audio, maps, reviews, video and so on.

Social Media includes all of the following:

1. Social Networking Sites, e.g., Facebook, MySpace, Google+, LinkedIn
2. Blogging and Microblogging platforms, e.g., Twitter, Tumblr, WordPress, LiveJournal
3. Photo and video-sharing platforms, e.g., Flickr, Instagram, Pinterest, YouTube
4. Location-based platforms, e.g., FourSquare, Facebook Places

We are interested in your use of these kinds of Social Media applications whether you access them on a computer and/or via 'apps' on a mobile device.

PLEASE NOTE - for the purpose of this research the following sites/applications are NOT included:

Email, chat rooms, instant messaging (e.g., Windows Live Messenger) etc.

Online games and virtual worlds such as SecondLife, World of Warcraft etc.

Who can take part: If you have used Social Media in the last 3 months (as defined above), you are over 13 years of age and a native or fluent English speaker, you are eligible to participate.

Confidentiality and Data Protection: You will complete the questionnaire anonymously, you will not be asked for your name or any other information which could identify you. All information collected will be treated in the strictest confidence. The results of this study may be presented in academic settings, professional conferences and published in academic journals. It will not be used for any marketing or sales purpose. Please be aware that once you have completed some/all of the questionnaire it is not possible for the researcher to withdraw your data. All published data will be anonymous and you will not be identifiable in any way.

Risk & Benefits: There is no risk involved for participants completing the survey. The benefit of this research is increased knowledge of the relationship between online risk and use of social media, this information could benefit future research and also guide future inventions to help address online risk behaviour.

Contact information: If you have concerns or questions about this study, please contact the principal researcher: Dawn Branley, Durham University, Psychology Department, Science Laboratories, South Road, Durham, DH1 3LE, United Kingdom. Email: dawn.branley@durham.ac.uk (This research is supervised by Dr Judith Covey, j.a.covey@durham.ac.uk and Dr Mariann Hardey, mariann.hardey@durham.ac.uk. The survey has been approved by the Durham University Ethics Committee, chair: luna.centifanti@durham.ac.uk) As a thank you for your time, all participants who complete the questionnaire receive the chance to enter a free prize draw to win £50 on Amazon.

Q1 If you wish to participate, please confirm the following:

❍ I confirm that I over 13 years of age. I have read and understood the information provided above and I consent to taking part in this study. (1)

Q2

❍ I confirm that I have used Social Media (as defined above) at least once in the last 3 months. (1)

Q3 Age:

Q4 Gender:

- ❍ Male (1)
- ❍ Female (2)

Q5 Do you consider yourself to be:

- ❍ Heterosexual (1)
- ❍ Gay or Lesbian (2)
- ❍ Bisexual (3)
- ❍ Prefer not to answer (4)

Q6 Country of birth:

Q7 Country of usual residence, i.e., the country in which you usually live and which you regard as home

Q8 Relationship status:

- ❍ Single (1)
- ❍ Casual relationship (2)
- ❍ Committed relationship (3)
- ❍ Separated/Divorced (4)
- ❍ Widowed (5)

Please answer the following questions in direct relation to your Social Media use, and not your general internet use. To recap, for the purpose of this research, Social Media refers to social networking websites and digital applications that enable people, identified by user profiles, to share information. This information can be in the form of 'statuses', messages, news, data, images, audio, maps, reviews, video and so on. Social Media includes all of the following:

1. Social Networking Sites, e.g., Facebook, MySpace, Google+, LinkedIn
2. Blogging and Microblogging platforms, e.g., Twitter, Tumblr, WordPress, LiveJournal
3. Photo and video-sharing platforms, e.g., Flickr, Instagram, Pinterest, YouTube
4. Location-based platforms, e.g., FourSquare, Facebook Places

We are interested in your use of these kinds of Social Media applications regardless of whether you access them on a computer and/or via 'apps' on a mobile device.

PLEASE NOTE: For the purpose of this research the following sites/applications are NOT included: Email, chat rooms, instant messaging (e.g., Windows Live Messenger) etc.

Online games and virtual worlds such as SecondLife, World of Warcraft etc.

Q9 Please indicate whether you have a user profile on any of the following Social Networking Sites?

	No Profile (1)	Active Profile (accessed within last 3 months) (2)	Inactive Profile (not accessed in last 3 months) (3)
Facebook (1)	❍	❍	❍
LinkedIn (2)	❍	❍	❍
MySpace (3)	❍	❍	❍
Google+ (4)	❍	❍	❍
Tagged (5)	❍	❍	❍
Bebo (6)	❍	❍	❍

Q10 Please indicate whether you have a user profile on any of the following blogging/microblogging platforms?

	No Profile (1)	Active Profile (accessed within last 3 months) (2)	Inactive Profile (not accessed in last 3 months) (3)
Twitter (1)	❍	❍	❍
Tumblr (2)	❍	❍	❍
WordPress (3)	❍	❍	❍
LiveJournal (4)	❍	❍	❍
Blogger (5)	❍	❍	❍

Q11 Please indicate whether you have a user profile on any of the following photo and video sharing platforms?

	No Profile (1)	Active Profile (accessed within last 3 months) (2)	Inactive Profile (not accessed in last 3 months) (3)
YouTube (1)	❍	❍	❍
FlickR (2)	❍	❍	❍
Pinterest (3)	❍	❍	❍
Instagram (4)	❍	❍	❍
Photobucket (5)	❍	❍	❍
Vimeo (6)	❍	❍	❍

Q12 Please indicate whether you have a user profile on any of the following location-sharing platforms?

	No Profile (1)	Active Profile (accessed within last 3 months) (2)	Inactive Profile (not accessed in last 3 months) (3)
FourSquare (1)	❍	❍	❍
Google Latitude (2)	❍	❍	❍

Q13 Do you have a profile on any other Social Media sites (that you have accessed within the last 3 months) that have not been listed in the previous questions?

❍ No (1)
❍ Yes - Please specify: (2) _____

Q14

	Once per week or less (1)	A few times per week (2)	Once or twice per day (3)	Several times per day (4)	Several times per waking hour (5)
On average how often do you access Social Media? (1)	❍	❍	❍	❍	❍

Q15

	Up to 4 hours (1)	5 - 7 hours (2)	8 - 14 hours (3)	15 - 20 hours (4)	Over 21 hours (5)
In an average week, how much time do you spend actively using Social Media? (1)	❍	❍	❍	❍	❍

Q16 Please indicate the extent to which you agree or disagree with the following statements:

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
Social Media is part of my everyday activity (1)	❍	❍	❍	❍	❍
I am proud to tell people that I use Social Media (2)	❍	❍	❍	❍	❍
Social Media has become part of my daily routine (3)	❍	❍	❍	❍	❍
I feel out of touch when I have not used Social Media for a while (4)	❍	❍	❍	❍	❍
Using Social Media makes me feel part of a community (5)	❍	❍	❍	❍	❍
I would be sorry if Social Media shut down (6)	❍	❍	❍	❍	❍
There are weeks when I do not use Social Media at all (7)	❍	❍	❍	❍	❍

Q17 Can you confidently do the following?

	Yes (1)	No (2)
Block messages from someone you don't want to hear from on a Social Networking website (1)	❍	❍
Change privacy settings on a Social Networking profile (2)	❍	❍
Hide your location on Social Media (3)	❍	❍
Remove content from your Social Media profile, e.g., delete photos or comments (4)	❍	❍

Q18 When they are available do you use privacy settings on your Social Media profiles to limit what information you share with others?

- ❍ Yes, always (1)
- ❍ Yes, sometimes (2)
- ❍ No, my Social Media profiles are openly accessible to anyone (3)
- ❍ I don't know (4)

Answer If When they are available do you use privacy settings on yo... No, my Social Media profiles are openly accessible to anyone Is Selected

Q19 Please explain why you choose NOT to use privacy settings:

Q107 25% of survey complete. Please click continue.

Q20 How often do you access Social Media in each of the circumstances listed below?

	Never (1)	Rarely (2)	Occasionally (3)	Frequently (4)
At home - alone (1)	❍	❍	❍	❍
At home - with friends or family (2)	❍	❍	❍	❍
At work or place of education - alone (3)	❍	❍	❍	❍
At work or place of education - with friends, family or colleagues (4)	❍	❍	❍	❍
'Out and about' via a mobile phone or similar portable device - alone (5)	❍	❍	❍	❍
'Out and about' via a mobile phone or similar portable device -	❍	❍	❍	❍

with friends or family (6) On a public computer, for example in an internet cafe, library or other public place - alone (7) On a public computer, for example in an internet cafe, library or other public place - with friends or family (8)	❍ ❍	❍ ❍	❍ ❍	❍ ❍

Q21

	None (1)	1 person (2)	2 people (3)	3 people (4)	4 people (5)	All of them (6)
Of the five people who you know best, how many use Social Media? (1)	❍	❍	❍	❍	❍	❍

Q22 Please indicate the extent to which you agree or disagree with the following statement:

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
People who are important to me think that I should use Social Media. (1)	❍	❍	❍	❍	❍

Q23 Do you access Social Media for any of the following reasons?

	Yes (1)	No (2)
To find contact information for friends/acquaintances, e.g., to find someones email address, postal address or phone number. (1)	❍	❍
To share an interest or hobby with like-minded individuals (2)	❍	❍
To make new friends (3)	❍	❍

To find romantic partners (4)	❍	❍
To find partners for casual sexual encounters (5)	❍	❍
To exchange files with work colleagues or classmates and/or conduct research for work or education. (6)	❍	❍
To read information about celebrities (7)	❍	❍
To find information about businesses, organisations and products (8)	❍	❍
To make appointments (e.g., arrange a meeting or book a table at a restaurant) (9)	❍	❍
To keep in touch with what is happening in the world, e.g., news, politics, weather, stocks/shares etc. (10)	❍	❍
To advertise your expertise/CV/services/products, to look for job vacancies or to network with other professionals (11)	❍	❍
To share information or stay in touch with close friends and/or family who you socialise with in an offline context (12)	❍	❍
To share information or stay in touch with old friends and/or distant family who you would have otherwise have found it difficult to stay in touch with (13)	❍	❍
To share information or stay in touch with online only friends (i.e., those who you do not socialise with in an offline context) (14)	❍	❍
To engage in trolling (i.e., to post abusive, highly controversial, upsetting or off-topic messages with the primary intent of provoking an emotional response from other users or to cause disruption) (15)	❍	❍
To look for religious or spiritual information (16)	❍	❍
To play games (17)	❍	❍
To find information on leisure	❍	❍

activities, e.g., movies, books, music, social events, cinema listings, gigs, etc. (18)		
To find information about someone you have just met or someone you think you may meet (19)	❍	❍
Listen or share music, videos and/or audio clips (20)	❍	❍
View or share pornography or other adult sexual content (21)	❍	❍
To find travel information (directions, maps, transport schedules etc.) (22)	❍	❍
To research family history (23)	❍	❍
To get involved in, or help promote, charity work and charity organisations (24)	❍	❍
To share creative content you have produced (e.g., artwork, music etc.) (25)	❍	❍

Q24 When you access Social Media, how often do you do the following?:

	Never (1)	Sometimes (2)	Usually (3)	Always (4)
Share an update about yourself e.g., update a 'status', post a 'tweet' etc. (1)	❍	❍	❍	❍
Read others' updates about themselves e.g., their statuses, tweets etc. (2)	❍	❍	❍	❍
Comment on others' updates and/or their uploaded content e.g., comment on another users' status, photographs etc. (3)	❍	❍	❍	❍
'Like', 'Favourite', 'Thumbs up' or 'Thank' others' updates, posts and/or uploaded content. (4)	❍	❍	❍	❍
Upload original content created by yourself e.g., photographs, videos, music, art etc. (5)	❍	❍	❍	❍
Share pre-existing content with others i.e., content such as photos, videos, music etc. that you have not personally	❍	❍	❍	❍

created (6)				
Send a 'closed' message to another user(s) e.g., send a personal or private message that only the recipient can see (7)	❍	❍	❍	❍
Send an 'open' message to another user(s) e.g., post a message on the recipient's profile that other users can also see (8)	❍	❍	❍	❍
Shared your current location (9)	❍	❍	❍	❍
Play games with/against other Social Media users (10)	❍	❍	❍	❍
Play games alone or against the computer (11)	❍	❍	❍	❍
Create a connection to another user e.g., send a friends request, 'follow' someone, 'subscribe' to someones profile etc. (12)	❍	❍	❍	❍
Delete friends or other connections e.g., unfriend, unfollow or block someone from your Social Media profile (13)	❍	❍	❍	❍
'Tag' someone in one of your updates or uploads e.g., mention someone in your status update/tweet, or label someone as being in a photo or video that you have uploaded (14)	❍	❍	❍	❍
Remove content that other users have uploaded that mentions or features yourself e.g., untag yourself from a photo (15)	❍	❍	❍	❍

Q25 Do you do any other activities on Social Media that are not included in the above lists?

- ❍ No (1)
- ❍ Yes - Please specify: (2) _____

Q26 Whilst using Social Media, how often do you come across material that encourages the following behaviours?This can include material that: is supportive of these behaviours, encourages and/or provides instruction on how to partake in these behaviours or simply portrays these behaviours in a positive light for example by portraying the behaviour as 'fun', 'enjoyable', 'cool', 'fashionable' etc.

	Never (1)	Rarely (2)	Occasionally (3)	Frequently (4)	Very Frequently (5)
Illegal drug use (1)	❍	❍	❍	❍	❍
Drinking alcohol to excess, i.e., until very drunk (2)	❍	❍	❍	❍	❍
Extreme dieting or EDs, for example: prolonged starvation, inducing vomiting, taking laxatives, spitting out food before swallowing or similar behaviour (3)	❍	❍	❍	❍	❍
SH (e.g., cutting/burning/scratching etc) (4)	❍	❍	❍	❍	❍
Fighting or inflicting harm upon others (5)	❍	❍	❍	❍	❍
Unprotected sex (6)	❍	❍	❍	❍	❍
Sex with a stranger (7)	❍	❍	❍	❍	❍
Dangerous pranks or stunts with possible physical risk to the person taking part (this could include potential bodily harm, loss of consciousness, being in a dangerous place, e.g., lying on a road). (8)	❍	❍	❍	❍	❍
Bullying, physically or verbally (this can also include hatred towards specific individuals or groups, e.g. racism) (9)	❍	❍	❍	❍	❍

Q113 Over 40% of survey complete. Please click continue.

Kirsty and her friends find it funny to upload embarrassing photos of each other to Facebook. Although Kirsty is embarrassed by the photos posted of her, she just accepts it as a joke. Kirsty does not use her privacy settings so her Facebook profile is openly accessible to everyone, she does not change her settings to stop her friends posting these photos, nor does she delete the photos from her Facebook account.

Please answer the following questions about Kirsty:

Q27 Here are a number of personality traits that may or may not apply to Kirsty. You should rate the extent to which you think the pair of traits applies to Kirsty, even if you think one characteristic applies more strongly than the other.Kirsty is probably someone who is...

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
Extraverted, enthusiastic (1)	❍	❍	❍	❍	❍
Critical, quarrelsome (2)	❍	❍	❍	❍	❍
Dependable, self-disciplined (3)	❍	❍	❍	❍	❍
Anxious, easily upset (4)	❍	❍	❍	❍	❍
Open to new experiences, complex (5)	❍	❍	❍	❍	❍
Reserved, quiet (6)	❍	❍	❍	❍	❍
Sympathetic, warm (7)	❍	❍	❍	❍	❍
Disorganised, careless (8)	❍	❍	❍	❍	❍
Calm, emotionally stable (9)	❍	❍	❍	❍	❍
Conventional, uncreative (10)	❍	❍	❍	❍	❍

Q28

	Very Unlikeable (1)	Moderately Unlikeable (2)	Neutral (3)	Moderately Likeable (4)	Very Likeable (5)
Do you think Kirsty is a likeable person? (1)	❍	❍	❍	❍	❍

Q30 Have any of your friends ever uploaded an embarrassing photo(s)/video(s) of you onto Social Media?

- ❍ No - my friends have never uploaded any embarrassing photos/videos of me (1)
- ❍ Yes - but the photos/videos were only viewable amongst friends (2)
- ❍ Yes - and the photos/videos were openly accessible to anyone (3)
- ❍ Yes - but I was not sure who could see the photos/videos (4)

Answer If Have any of your friends ever uploaded an embarrassing ph... No – my friends have never uploaded any embarrassing photos/videos of me Is Not Selected

Q103 Did you take any action to remove the photos/videos or to limit who could see them, e.g., by deleting or requesting deletion of the content, untagging yourself or changing your privacy settings?

- ❍ Yes (1)
- ❍ No (2)

Q31 As far as your are aware, have any of your friends ever had embarrassing photos of themselves posted onto Social Media, by you or any of their other friends?

- ❍ No - my friends have never had any embarrassing photos of themselves uploaded by others (1)
- ❍ Yes - but the photos/videos were only viewable amongst friends (2)
- ❍ Yes - and the photos/videos were openly accessible to anyone (3)
- ❍ Yes - but I was not sure who could see the photos/videos (4)

Answer If As far as your are aware, have any of your friends ever h... No - my friends have never had any embarrassing photos of themselves uploaded by others Is Not Selected

Q105 As far as you are aware, did your friend(s) take any action to remove the embarrassing photos/videos or to limit who could see them, e.g., by deleting or requesting deletion of the content, untagging themself or changing their privacy settings?

- ❍ Yes (1)
- ❍ No (2)

Q32

	Very Unwilling (1)	Quite Unwilling (2)	Neither Willing nor Unwilling (3)	Quite Willing (4)	Very Willing (5)
If you were in the same scenario as Kirsty, how willing would you be to allow embarrassing photos of you to remain on openly accessible Social Media? (1)	❍	❍	❍	❍	❍

Q33

	Not at all (1)	A little (2)	Moderately (3)	Considerably (4)	Extremely (5)
If you did allow embarrassing photos of yourself on openly accessible Social Media, how beneficial do you think it would be for you personally? (1)	❍	❍	❍	❍	❍
If you did allow embarrassing photos of yourself on openly accessible Social Media, how risky do you think it would be for you personally? (2)	❍	❍	❍	❍	❍

Q34 Please indicate the extent to which you agree or disagree with the following statement:

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
People who are important to me think that I should take part in this type of behaviour. (1)	❍	❍	❍	❍	❍

Alex loves to use social media to let his friends know where he is and what he is currently doing, for example he often openly shares the location of the coffee shop or bar that he is currently at, so that anyone who is nearby can join him for a drink.

Please answer the following questions about Alex:

Q36

	Very Unlikeable (1)	Moderately Unlikeable (2)	Neutral (3)	Moderately Likeable (4)	Very Likeable (5)
Do you think Alex is a likeable person? (1)	❍	❍	❍	❍	❍

Q35 Here are a number of personality traits that may or may not apply to Alex. You should rate the extent to which you think the pair of traits applies to Alex, even if you think one characteristic applies more strongly than the other.Alex is probably someone who is...

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
Extraverted, enthusiastic (1)	❍	❍	❍	❍	❍
Critical, quarrelsome (2)	❍	❍	❍	❍	❍
Dependable, self-disciplined (3)	❍	❍	❍	❍	❍
Anxious, easily upset (4)	❍	❍	❍	❍	❍
Open to new experiences, complex (5)	❍	❍	❍	❍	❍
Reserved, quiet (6)	❍	❍	❍	❍	❍
Sympathetic, warm (7)	❍	❍	❍	❍	❍
Disorganised, careless (8)	❍	❍	❍	❍	❍
Calm, emotionally stable (9)	❍	❍	❍	❍	❍
Conventional, uncreative (10)	❍	❍	❍	❍	❍

Q38 Have you ever shared your current location through Social Media?

- ❍ No – I have never shared my current location through Social Media (1)
- ❍ Yes – I have shared my current location through Social Media but only with friends I also know offline (2)
- ❍ Yes – I have shared my current location through Social Media including sometimes with friends I only know online (3)
- ❍ Yes - I have shared my current location openly through Social Media so that anyone could see it (4)

Q39 As far as your are aware, have any of your friends ever shared their current location openly through Social Media?

- ❍ No – they have never shared their current location through Social Media (1)
- ❍ Yes – they have shared their current location through Social Media but only with friends that they also know offline (2)
- ❍ Yes – they have shared their current location through Social Media including sometimes with friends that they only know online (3)
- ❍ Yes - they have shared their current location openly through Social Media so that anyone could see it (4)

Q40

	Very Unwilling (1)	Quite Unwilling (2)	Neither Willing nor Unwilling (3)	Quite Willing (4)	Very Willing (5)
If you were in the same scenario as Alex, how willing would you be to share your location openly through Social Media? (1)	❍	❍	❍	❍	❍

Q41

	Not at all (1)	A little (2)	Moderately (3)	Considerably (4)	Extremely (5)
If you shared your location openly through Social Media, how beneficial do you think it would be for you personally? (1)	❍	❍	❍	❍	❍
If you shared your location openly through Social Media, how risky do you think it would be for you personally? (2)	❍	❍	❍	❍	❍

Q42 Please indicate the extent to which you agree or disagree with the following statement:

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
People who are important to me think that I should take part in this type of behaviour. (1)	❍	❍	❍	❍	❍

Tom and his friends are playing a game known as 'Planking'. The aim is to try to lie straight, like a plank of wood, in the most original or difficult place. They aim to have the best, craziest and/or funniest photo, which they share openly through Social Media.

Please answer the following questions about Tom:

Q43 Here are a number of personality traits that may or may not apply to Tom. You should rate the extent to which you think the pair of traits applies to Tom, even if you think one characteristic applies more strongly than the other.Tom is probably someone who is...

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
Extraverted, enthusiastic (1)	❍	❍	❍	❍	❍
Critical, quarrelsome (2)	❍	❍	❍	❍	❍
Dependable, self-disciplined (3)	❍	❍	❍	❍	❍
Anxious, easily upset (4)	❍	❍	❍	❍	❍
Open to new experiences, complex (5)	❍	❍	❍	❍	❍
Reserved, quiet (6)	❍	❍	❍	❍	❍
Sympathetic, warm (7)	❍	❍	❍	❍	❍
Disorganised, careless (8)	❍	❍	❍	❍	❍
Calm, emotionally stable (9)	❍	❍	❍	❍	❍
Conventional, uncreative (10)	❍	❍	❍	❍	❍

Q44

	Very Unlikeable (1)	Moderately Unlikeable (2)	Neutral (3)	Moderately Likeable (4)	Very Likeable (5)
Do you think Tom is a likeable person? (1)	❍	❍	❍	❍	❍

Q46 Have you ever participated in 'planking' or a similar prank?

- ❍ No – I have never participated in planking or any similar type of prank (1)
- ❍ Yes – I have done this kind of prank but I did NOT share any photos/videos of me doing it through Social Media (2)
- ❍ Yes – I have done this kind of prank and I DID share the photos/videos but only with my friends through Social Media (3)
- ❍ Yes – I have done this kind of prank and the photos/videos of me doing it were posted openly on Social Media so that anyone could see them (4)

Q47 As far as you are aware, have any of your friends ever participated in 'planking' or a similar prank?

- ❍ No – they have never participated in planking or any similar type of prank (1)
- ❍ Yes – they have done this kind of prank but they did NOT share any photos/videos of this through Social Media (2)
- ❍ Yes – they have done this kind of prank and they DID share the photos/videos but only with their friends through Social Media (3)
- ❍ Yes – they have done this kind of prank and the photos/videos of them doing it were posted openly on Social Media (4)

Q48

	Very Unwilling (1)	Quite Unwilling (2)	Neither Willing nor Unwilling (3)	Quite Willing (4)	Very Willing (5)
If you were in the same scenario as Tom, how willing would you be to take part in planking and share the photos openly through Social Media? (1)	❍	❍	❍	❍	❍

Q49

	Not at all (1)	A little (2)	Moderately (3)	Considerably (4)	Extremely (5)
How beneficial do you think it would be for you personally to take part in planking? (1)	❍	❍	❍	❍	❍
How risky do you think it would be for you personally to take part in planking? (2)	❍	❍	❍	❍	❍
How beneficial do you think it would be for you personally to share photos of you planking openly through Social Media? (3)	❍	❍	❍	❍	❍
How risky do you think it would be for you personally to share photos of you planking openly through Social Media? (4)	❍	❍	❍	❍	❍

Q50 Please indicate the extent to which you agree or disagree with the following statement:

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
People who are important to me think that I should take part in this type of behaviour. (1)	❍	❍	❍	❍	❍

Rebecca 'met' Ian online when he sent her a friends request through Facebook. She accepted his request and they have been messaging each other and chatting online regularly. Rebecca really likes Ian and he has told her that the feeling is mutual, both have expressed an interest in dating and they plan to meet within the next fortnight. Rebecca and Ian have privately exchanged photos including some photos of a mild sexual nature.

Please answer the following questions about Rebecca:

Q51 Here are a number of personality traits that may or may not apply to Rebecca. You should rate the extent to which you think the pair of traits applies to Rebecca, even if you think one characteristic applies more strongly than the other.Rebecca is probably someone who is...

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
Extraverted, enthusiastic (1)	❍	❍	❍	❍	❍
Critical, quarrelsome (2)	❍	❍	❍	❍	❍
Dependable, self-disciplined (3)	❍	❍	❍	❍	❍
Anxious, easily upset (4)	❍	❍	❍	❍	❍
Open to new experiences, complex (5)	❍	❍	❍	❍	❍
Reserved, quiet (6)	❍	❍	❍	❍	❍
Sympathetic, warm (7)	❍	❍	❍	❍	❍
Disorganised, careless (8)	❍	❍	❍	❍	❍
Calm, emotionally stable (9)	❍	❍	❍	❍	❍
Conventional, uncreative (10)	❍	❍	❍	❍	❍

Q52

	Very Unlikeable (1)	Moderately Unlikeable (2)	Neutral (3)	Moderately Likeable (4)	Very Likeable (5)
Do you think Rebecca is a likeable person? (1)	❍	❍	❍	❍	❍

Q54 Have you ever privately shared ANY photos or videos of yourself with someone you met through Social Media?

- ❍ No – I have never shared photos or videos of myself with someone I've met through Social Media (1)
- ❍ Yes – I have shared photos or videos of myself with someone I met through Social Media but NOT of a sexual nature (2)
- ❍ Yes - I have shared photos or videos of myself of a sexual nature with someone I met through Social Media but only after I had met them in person first (3)
- ❍ Yes – I have shared photos or videos of myself of a sexual nature with someone I met through Social Media even though I had never met them in person (4)

Q55 As far as you are aware, have any of your friends ever shared photos or videos of themselves with someone that they met through Social Media?

- ❍ No – they have never shared photos or videos of themself with someone that they met through Social Media (1)
- ❍ Yes – they have shared photos or videos of themself with someone that they met through Social Media but NOT of a sexual nature (2)
- ❍ Yes - they have shared photos or videos of themself of a sexual nature with someone that they met through Social Media but only after they had met them in person first (3)
- ❍ Yes – they have shared photos or videos of themself of a sexual nature with someone that they met through Social Media even though they had never met them in person (4)

Q56

	Very Unwilling (1)	Quite Unwilling (2)	Neither Willing nor Unwilling (3)	Quite Willing (4)	Very Willing (5)
If you were in the same scenario as Rebecca, how willing would you be to share photos and/or videos of a sexual nature with someone you had met online through Social Media? (1)	❍	❍	❍	❍	❍

Q57

	Not at all (1)	A little (2)	Moderately (3)	Considerably (4)	Extremely (5)
If you did privately share sexual content with someone you met online, how beneficial do you think it would be for you personally? (1)	❍	❍	❍	❍	❍
If you did privately share sexual content with someone you met through Social Media, how risky do you think it would be for you personally? (2)	❍	❍	❍	❍	❍

Q58 Please indicate the extent to which you agree or disagree with the following statement:

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
People who are important to me think that I should take part in this type of behaviour. (1)	❍	❍	❍	❍	❍

Q117

Q59 Please slide the slider to indicate your response to the following question:

_____ Thinking about your life and personal circumstances, how satisfied are you with your life as a whole? (1)

Q60 Here are a number of personality traits that may or may not apply to you. Please indicate the extent to which you agree or disagree with each statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.I am someone who is...

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
Extraverted, enthusiastic (1)	❍	❍	❍	❍	❍
Critical, quarrelsome (2)	❍	❍	❍	❍	❍
Dependable, self-disciplined (3)	❍	❍	❍	❍	❍
Anxious, easily upset (4)	❍	❍	❍	❍	❍
Open to new experiences, complex (5)	❍	❍	❍	❍	❍
Reserved, quiet (6)	❍	❍	❍	❍	❍
Sympathetic, warm (7)	❍	❍	❍	❍	❍
Disorganised, careless (8)	❍	❍	❍	❍	❍
Calm, emotionally stable (9)	❍	❍	❍	❍	❍
Conventional, uncreative (10)	❍	❍	❍	❍	❍

Q61 Please indicate the extent to which you agree or disagree with the following statements.Please do not think too long before answering; usually your first inclination is also the best one

	Totally Disagree 0 (1)	1 (2)	2 (3)	3 (4)	4 (5)	5 (6)	6 (7)	7 (8)	8 (9)	9 (10)	Totally Agree 10 (11)
Safety first (1)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
I do not take risks with my health (2)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
I prefer to avoid risks (3)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
I take risks regularly (4)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
I really dislike not knowing what is going to happen (5)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
I usually view risks as a challenge (6)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Q62 Please rate the extent to which you view yourself as a risk avoider or risk seeker:

	Risk Avoider 0 (1)	1 (2)	2 (3)	3 (4)	4 (5)	5 (6)	6 (7)	7 (8)	8 (9)	9 (10)	Risk Seeker 10 (11)
I view myself as a... (1)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Q63 Please note - This question refers to general content that is available publicly on social media. Please do not include comments or content that has been specifically aimed at you.

_____ In the last 3 months, has the content that you have seen on Social Media sites been generally positive or negative? (1)

Q64 Have you personally experienced any of the following negative consequences as a direct result of your use of Social Media? If you have experienced any of the following, please indicate how much distress this caused you.

	Yes (1)	No (2)
Other - If yes, please specify: (63)	❍	❍
Problems with your boss, work colleagues or school (184)	❍	❍
Disagreements with friends (185)	❍	❍
Breakup of a romantic relationship (186)	❍	❍
Someone gaining unauthorised access to your Social Media account(s) (187)	❍	❍
Lost money or had someone obtain private financial information about you as a result of being cheated/scammed or blackmailed through Social Media (188)	❍	❍
Identity theft, i.e., someone claiming to be you based on information from your Social Media profile(s). (189)	❍	❍
Embarrassing content about you posted on Social Media by other users and which you would prefer was not seen (e.g., embarrassing photos or comments about you) (190)	❍	❍
Unwanted sexual attention from another user (191)	❍	❍
Deliberately hurtful comments posted to, or about, you on Social Media by other users (192)	❍	❍
Another user using content from your Social Media profile (e.g., photographs, videos etc) and using it as if it were their own (193)	❍	❍
Regret over sharing content on Social Media that you later wished you had not shared (194)	❍	❍
Regret over a romantic relationship with someone you met through Social Media that you now wish had not happened (195)	❍	❍
Regret over a casual sexual encounter with someone you met through Social Media that you now wish had not happened (196)	❍	❍
Distress over seeing upsetting material online (this refers to general content that was not targeted at you specifically) (197)	❍	❍
Distress as a result of seeing upsetting material that was aimed at you specifically (198)	❍	❍

Answer If Have you personally experienced any of the following nega... - Yes Is Greater Than or Equal to 1

Q65

	No distress (1)	A little distressed (2)	Moderately distressed (3)	Considerably distressed (4)	Extremely distressed (5)
Thinking about the worst consequence that you indicated above, how distressed did this make you feel? (1)	❍	❍	❍	❍	❍

Q66 Have you personally experienced any of the following benefits of Social Media use?

	Yes (1)	No (2)
Emotional support from others (1)	❍	❍
Relaxation, escape from daily stresses (2)	❍	❍
Financial support from others (3)	❍	❍
Greater awareness of products (4)	❍	❍
Greater awareness of, and/or invitations to, offline social events (5)	❍	❍
School/Study or Career related benefits (6)	❍	❍
Ideas and inspirations (7)	❍	❍
New hobbies (8)	❍	❍
New friendships (9)	❍	❍
Strengthened existing friendships (10)	❍	❍
Increased knowledge (11)	❍	❍
New romantic relationship(s) that you did not regret (12)	❍	❍
Casual sexual relationship(s)/encounter(s) that you did not regret (13)	❍	❍
Other - If yes, please specify: (14)	❍	❍
Feeling good as a result of seeing positive material online (this refers to general content that was not targeted at you specifically) (15)	❍	❍

Answer If Have you personally experienced any of the following bene... - Yes Is Greater Than or Equal to 1

Q67

	Did not affect how I felt (1)	A little (2)	Moderately (3)	Considerably (4)	Extremely (5)
Thinking about the most positive consequence that you indicated above, how good did this make you feel? (1)	❍	❍	❍	❍	❍

Q68

	Not at all (1)	A little (2)	Moderately (3)	Considerably (4)	Extremely (5)
How beneficial do you think using Social Media is for the average user? (1)	❍	❍	❍	❍	❍
How risky do you think using Social Media is for the average user? (2)	❍	❍	❍	❍	❍
How beneficial do you think using Social Media is for you personally? (3)	❍	❍	❍	❍	❍
How risky do you think using Social Media is for you personally? (4)	❍	❍	❍	❍	❍

Q69 How much do you agree with the following statement?

	Strongly Disagree (1)	Moderately Disagree (2)	Neither Agree nor Disagree (3)	Moderately Agree (4)	Strongly Agree (5)
I feel confident in my ability to deal with any negative experiences I may have whilst using Social Media (1)	❍	❍	❍	❍	❍

Q118

The questions below refer to your general behaviour and do not need to have any connection to your use of Social Media

Q70 In the last 12 months, how often have you done the following?:

	Never (1)	Rarely (2)	Occasionally (3)	Frequently (4)	Very Frequently (5)
Taken illegal drugs (1)	❍	❍	❍	❍	❍
Drank alcohol to excess, i.e., until you were very drunk (2)	❍	❍	❍	❍	❍
Went on an extreme diet involving any of the following: prolonged starvation, inducing vomiting, taking laxatives, spitting out food before swallowing or similar behaviour (3)	❍	❍	❍	❍	❍
Deliberately caused yourself physical harm (e.g., cutting/burning/scratching etc) (4)	❍	❍	❍	❍	❍
Been involved in a physical fight or inflicted harm upon another person (5)	❍	❍	❍	❍	❍
Had unprotected sex (6)	❍	❍	❍	❍	❍
Had sex with a stranger (7)	❍	❍	❍	❍	❍
Participated in a stunt or prank which involved potential physical risk to yourself (this could include potential bodily harm, loss of consciousness, being in a dangerous place, e.g., lying on a road). (8)	❍	❍	❍	❍	❍
Bullied another individual(s), physically or verbally (this could include racism). (9)	❍	❍	❍	❍	❍

Q71 To the best of your knowledge, have any of your friends done the following things within the last 12 months?

	Not aware of any friends who have done this (1)	Know of one friend who has done this (2)	Know of more than one friend who has done this (3)
Taken illegal drugs (1)	❍	❍	❍
Drank alcohol to excess, i.e., until they were very drunk (2)	❍	❍	❍
Went on an extreme diet involving any of the following: prolonged starvation, inducing vomiting, taking laxatives, spitting out food before swallowing or similar behaviour (3)	❍	❍	❍
Deliberately caused themself physical harm (e.g., cutting/burning/scratching etc) (4)	❍	❍	❍
Been involved in a physical fight or inflicted harm upon another person (5)	❍	❍	❍
Had unprotected sex (6)	❍	❍	❍
Had sex with a stranger (7)	❍	❍	❍
Participated in a stunt or prank which involved potential physical risk to themself (this could include potential bodily harm, loss of consciousness, being in a dangerous place, e.g., lying on a road). (8)	❍	❍	❍
Bullied another individual(s), physically or verbally (this could include racism). (9)	❍	❍	❍

Appendix B: Social Media Intensity Scale (SMIS; Study 1)

The Social Media Intensity Scale is based upon the Facebook Intensity Scale (Ellison, Steinfield & Lampe, 2007). The researcher has modified the scale to incorporate a broader range of social media use rather than restricting application to Facebook usage only.

The scale is designed to measure frequency and duration and incorporate emotional connectedness to social media. In addition, a new measure was added to measure social media dependency (item G).

Scale Items

Items A-G answered on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree):

A. Social media is part of my everyday activity
B. I am proud to tell people I use social media
C. Social media has become part of my daily routine
D. I feel out of touch when I haven't logged onto social media for a while
E. Using social media makes me feel part of a community
F. I would be sorry if social media shut down
G. There are weeks when I do not use social media at all

H. On average how often do you access social media? Scored 1-5 as follows:
    1. Once per week or less
    2. A few times per week
    3. Once or twice per day
    4. Several times per day
    5. Several times per waking hour

I. In an average week, how much time do you spend actively using Social Media? Scored 1-5 as follows:
    1. Up to 4 hours
    2. 5 – 7 hours
    3. 8 – 14 hours
    4. 15 – 20 hours
    5. Over 21 hours

Computing the Scale

Item G is reverse scored. The Facebook Intensity score is then computed by calculating the mean of all of the items in the scale (each item scored on a 5 point likert-type scale).

Appendix C: Search terms list (Studies 2 & 3)

	No. of tweets in 14 days
proana	154
#proana	700
pro-ana	180
#pro-ana	<10
"pro ana"	700
ana	too noisy
#ana	too noisy (30,000)
pro-anorexia	50
#pro-anorexia	<10
proanorexia	<10
#proanorexia	<10
anorexia	26,000
#anorexia	2000
anorexic	20,000
#anorexic	400
"anorexia problems"	<10
#anorexiaproblems	100
promia	44
#promia	140
pro-mia	<10
"pro mia"	50
mia	too noisy
#mia	too noisy
bulimia	9,000
#bulimia	900
bulimic	2,000
#bulimic	100
eatingdisorder	12
#eatingdisorder	1,500
"eating disorder"	10,000
"ed" (will this also find #ed?)	too noisy
#ed	7,000
edproblems	<10
#edproblems	1,000
ednos	130
#ednos	250
proed	120
pro-ed	18
"pro ed"	1,200
thinspiration	1,000
#thinspiration	2,000
thinspo	4,000
#thinspo	9,000
skinny	too general (600,000)
#skinny	too noisy

weightloss	too noisy
diet	too noisy
#sizezero	30
#flatstomach	too noisy
"thigh gap"	noisyA
#thighgap	1,800
#Bikinibridge	300
#binge	too noisy
#fat	too noisy
selfharm	1000
#selfharm	2000
self-harm	6000
#self-harm	28
"self harm"	22000
cutting	too noisy
#cutting	too noisy
staystrong	too noisy
anxiety	too general
scars	too noisy
#bones	too noisy
#selfhatred	too noisy (70)
#selfhate	200
#recovery	too noisy
#selfinjury	120
#cutter	too noisy (360)
#notgoodenough	too noisy

Appendix D: Coding scheme (Study 2)

Code	Levels and description of code
Excluded Do not code anything else for these accounts	*1.* Spam – if post is a spam message, e.g., from an automated account *2.* Deleted – if post has been deleted *3.* Private – if the user's blog has been turned to private *4.* Foreign – if post is in a non-english language *5.* Error – if an error is displayed when trying to view the item URL *6.* Suspended – user has had account suspended by Twitter/Tumblr
Gender	*0.* Unclear *1.* Male *2.* Female *3.* Organisation
Anonymous	*0.* Unclear *1.* Anonymous – no full name or identifiable photo *2.* Not Anonymous - if user provides their full name *3.* Partly Anonymous – if user does not provide their full name but does provide an identifiable photo
BLOG_Thinness_orED_Major_Theme	*0.* Unclear – *1.* Yes – Thinness and/or eating disorder related material appears as a major theme on the user's blog, i.e., the user appears to have numerous posts about these topics on their blog. *2.* No – Thinness/ED is not a major theme on this user's blog.
BLOG_Pro_AnaORAnti_Ana (only code this if the blog is a thinness/ED blog)	Based upon an overall evaluation of the <u>most prominent</u> theme on a users blog. *0.* Unclear/neither – It is not clear whether the user has a pro-ana, anti-ana or pro-recovery attitude. For example, the user may share ana-related material but also have <u>content on their blog that suggests that they do not think ana is a good thing</u>, i.e., they recognise that certain behaviours such as bulimia are a problem but they do not indicate that recovery is desired nor do they express any anti-ana opinions. These users may share ana-related content e.g., saying they are preoccupied with their weight, thin images etc BUT they appear to be using social media more to document/express their struggle with ED rather than to encourage it (could be coded as "unclear/neither" here but "yes" for "Thinness_2fat_expressed"). *1.* Pro-ana – Overall, the user's blog appears to support or encourage disordered eating, e.g., sharing content that expresses a desire to lose weight, sharing thinspiration, displaying quotes which relate to disordered eating e.g., "nothing feels as good as skinny feels". Images which show a desire to be thin, e.g.., tape measures around waist or quotes such as "so many calories". Blog is promoting the idea than being thin is desirable. *2.* Anti-ana – Overall, the user's blog appears to challenge pro-ana views, e.g., expresses a negative attitude towards users who share content which could encourage disordered eating in others for example through the sharing of thinspiration or pro-ana quotes. This may include anti-ana quotes such as "you are worth more than the numbers on the scales", "your worth is not equivalent to your thigh gap" etc. Alternatively/additionally an anti-ana blog may feature content that challenges stereotypes within the community that encourage, or place an emphasis upon, thinness. Includes 'humourous' posts that poke fun at pro-ana, e.g., jokes about wanting a thigh gap etc (coded as anti-ana here and "yes" for

	POST_humour). *3.* Pro-recovery – Overall, the users blog appears to encourage or support recovery in others and/or document the user's recovery. Although disordered eating may be discussed, this is not with the purpose of encouraging this behaviour nor portraying it in a positive manner (i.e., the person is not projecting a pro-ana stance).
BLOG_Depression_Suicide_SH (code this <u>even if not</u> a ED/thinness blog)	*1.* Yes, depression – Blog expresses depressive feelings. The user does <u>not</u> need to explicitly state that they are feeling this way - this can be implied by the content that they are blogging. <u>It is assumed that users share content that they relate to</u> (unless there are any user comments to suggest otherwise). *2.* Yes, depression and/or suicide/self-harm – Blog expresses depressive feelings AND/OR suicidal feelings, or some desire or thought of self-harming. The user does <u>not</u> need to explicitly state that they are feeling this way - this can be implied by the content that they are blogging. <u>It is assumed that users share content that they relate to</u> (unless there are any user comments to suggest otherwise). *3.* No – Posts does not express any depressive and/or suicidal feelings, or desire/thought of self-harming
POST_Original	*0.* Unclear – Not clear whether the post is original or a retweet/reblog *1.* Yes, original – Post is original, i.e., not reblogged from another user on the platform *2.* No, reblog/retweet – Post has been reblogged from another user
POST_No_of_RTs	Number of times the post has been shared and/or favourite by other users.
POST_Pro_Ana	*0.* Unclear *1.* Yes – Post expresses a pro-ana attitude or behaviour, i.e., communicating about ED in a positive manner or one that encourages disordered eating with no emphasis upon recovery or recognition that disordered eating is a negative behaviour. For example, sharing content that expresses a desire to lose weight, sharing thinspiration, sharing quotes that relate to disordered eating e.g., "nothing feels as good as skinny feels" and "keep going" (in relation to weight loss). Includes posts that include a link to another site or blog that is openly described as a pro-ana or thinspo blog. *2.* No – Post does not include any pro-ana content.
POST_Pro_Recovery	*0.* Unclear *1.* Yes – Post expresses a pro-recovery attitude, i.e., appears to encourage recovery in others and/or document the user's recovery. Although disordered eating may be discussed, this appears to be with the aim of aiding recovery or providing/receiving support which does <u>not</u> encourage disordered eating. *2.* No – Post does not include pro-recovery content.
POST_Anti_Ana	*0.* Unclear *1.* Yes – Post expresses an anti pro-ana attitude, i.e., expresses a negative attitude towards users who share content which could encourage disordered eating in others for example through the sharing of thinspiration or pro-ana quotes; or challenges stereotypes within the community which

	encourage, or place an emphasis upon, thinness. Includes 'humourous' posts that poke fun at pro-ana, e.g., jokes about wanting a thigh gap etc (coded as anti-ana here and "yes" for POST_humour). *2.* No – Post does not include anti pro-ana content.
POST_Body_Images	*0.* Yes, neither/ unclear purpose – It is not clear why the user is sharing this body image (or they are sharing for reasons not specified below). *1.* Yes, thinspiration images – The user appears to be sharing this image as thinspiration, i.e., to act as an incentive or 'inspiration' for the user and/or the viewer(s) to lose weight *2.* Yes, images which challenge thinness as norm – User is sharing this image to challenge social norms and pressure to be thin. *3.* No images
POST_Emotion_Expressed	Emotion expressed refers to the emotion that the user is portraying by writing or reblogging a post. E.g., if they reblog an image depicting a want to commit suicide than I am assuming that they have reblogged this because they relate to it, i.e., it represents something about themself, so this would be coded as negative (unless they add any comments to suggest otherwise). *1.* Negative – The user is expressing negative emotion(s), e.g., frustration, depression, hopelessness, tiredness, confusion etc. *2.* Positive – The user is expressing positive emotion(s), e.g., happiness, hopefulness, satisfaction, etc. *3.* Negative and positive – The user is expressing mixed emotions, positive and negative. *4.* No emotion – The user does not appear to be explicitly expressing any emotion in this post.
POST_Support_Offered	*0.* Yes, unclear purpose *1.* Yes, pro-ana – User is offering support to others in a way that encourages disordered eating, e.g., by encouraging other users to restrict or purge or by offering to share thinspiration. *2.* Yes, anti-ana (incl. pro-recovery) – User is offering support to users suffering from disordered eating or a desire to be thinner by providing someone to talk to or by encouraging a healthy lifestyle, tips to overcome ED, developing a more positive body image etc. The user does not offer support which encourages disordered eating. *3.* No – No support offered.
POST_Support_Requested	*0.* Yes, unclear purpose – User is offering support but unclear if this is pro-ana, pro-recovery or for another purpose. *1.* Yes, pro-ana – User is requesting support to encourage their disordered eating, e.g., by asking others for thinspiration or to support them while they purge, provide pro-ana hints and tips etc. *2.* Yes, anti-ana (incl. pro-recovery) – User is requesting support from others to help him/her overcome their disordered eating, e.g., asking for tips on how to overcome the desire to purge, how to get help, healthy alternatives to disordered eating etc. *3.* No – No support offered.

POST_Awareness_Others	*1.* Yes – User appears to be sharing content with the aim of raising awareness of issues around ED in others (i.e., general population, friends and family). This can include information regarding awareness of ED prevalence, how to spot the signs of ED, dispelling stereotypes regarding ED(e.g., by raising awareness of who can get ED), sharing newspaper articles etc. This also includes material aimed at 'educating' friends and family about the kind of help that someone with ED needs to help them to recover or recognise their illness. This can also include content that highlights factors which can fuel eating disorders (Exception: does not include content aimed at raising awareness in ED sufferers themselves, e.g., awareness of recovery techniques etc. These would be coded as pro-recovery instead) *2.* No – User does not appear to be sharing content with the aim of raising awareness of issues around ED (as defined above).
POST_ChallengeSocialNorms	*0.* Unclear *1.* Yes – Post is aiming to challenge social norms, e.g., challenging social pressure to be thin and emphasis upon appearances etc. *2.* No – User does not appear to be aiming to challenge social norms regarding pressure to be thin or an emphasis upon appearance.
POST_Humour	*0.* Unclear – It is unclear whether the user is using humour *1.* Yes – User is using humour in relation to ED, e.g., using ED terms in a flippant manner (e.g., my fridge is so empty it's anorexic), using ED as a 'humourous insult', sharing jokes about ED etc. *2.* No – User is not using humour in relation to ED

Appendix E: Coding scheme (Study 3)

Code	Levels and description of code
Excluded	*7.* Spam – if post is a spam message, e.g., from an automated account *8.* Deleted – if post has been deleted *9.* Private – if the user's blog has been turned to private *10.* Foreign – if post is in a non-english language *11.* Error – if an error is displayed when trying to view the item URL *12.* Suspended – user has had account suspended by Twitter/Tumblr *13.* Duplicate *14.* Not relevant to SH (Search error)
Gender	*4.* Unclear *5.* Male *6.* Female *7.* Organisation
Anonymous	*4.* Unclear *5.* Anonymous – no full name or identifiable photo *6.* Not Anonymous - if user provides their full name *7.* Partly Anonymous – if user does not provide their full name but does provide an identifiable photo
BLOG_SH_Major_Theme	Self-harm related material appears as a major theme on the user's blog, i.e., the user appears to have numerous posts about this topic on their blog. Pro-SH/anti-SH/pro-recovery judgement is based upon an overall evaluation of the <u>most prominent</u> theme on a users blog. *3.* Unclear if SH is major theme *4.* Yes, pro-SH – Overall, the user's blog appears to support or encourage SH, and/or portrays the behaviour in a desirable manner. *5.* Yes, anti-SH – Overall, the user's blog appears to challenge pro-SH views, e.g., expresses a negative attitude towards users who share content which could encourage self-harm in others for example through the sharing of SH images or pro-SH quotes. User is against the sharing of content that glorifies and/or romanticises self-harm. This also includes posts which highlight the negative consequences of SH without referring to recovery (if recovery is mentioned, code as pro-recovery) *6.* Yes, pro-recovery – Overall, the users blog appears to encourage or support recovery in others and/or document the user's recovery. Although SH may be discussed, this is not with the purpose of encouraging this behaviour nor portraying it in a positive manner (i.e., the person is not projecting a pro-SH stance). Posts which include helplines specifically for self-harm (even if amongst other types of helplines) should also be coded as pro-recovery. *7.* Yes, but unclear if pro/anti/pro-recovery. *8.* No (SH not a major theme)
BLOG_Depression_Suicide	Blog expresses depressive feelings AND/OR suicidal feelings. The user does <u>not</u> need to explicitly state that they are feeling this way - this can be implied by the content that they are blogging. <u>It is assumed that users share content that they relate to</u> (unless there are any user comments to suggest otherwise). *4.* Yes, depression and/or suicide *5.* No – Posts do not express any depressive and/or suicidal feelings.
BLOG_Refere	User shares content about eating disorders or blog has ED theme.

nces_ED	*0.* Unclear *1.* Yes *2.* No
BLOG_FandomBlog	Celebrities/ musicians major theme on blog *0.* Unclear *1.* Yes *2.* No
POST_Original	*3.* Unclear – Not clear whether the post is original or a retweet/reblog *4.* Yes, original – Post is original, i.e., not reblogged from another user on the platform *5.* No, reblog/retweet – Post has been reblogged from another user
POST_No_of_RTs	Number of times the post has been shared and/or favourite by other users.
POST_Pro_Anti_OR_Recovery	*3.* Unclear *4.* Pro-SH Post appears to support or encourage SH, and/or portrays the behaviour in a desirable manner. *5.* Anti-SH Post appears to challenge pro-SH views, e.g., expresses a negative attitude towards users who share content which could encourage self-harm in the user and/or others. *6.* Pro-recovery Post appears to encourage or support recovery in others and/or document the user's recovery. Although SH may be discussed, this is not with the purpose of encouraging this behaviour nor portraying it in a positive manner (i.e., the person is not projecting a pro-SH mentality).
POST_SH_Experience	Post is providing insight into the experience of suffering from SH (e.g., what it feels like, effects on their lives, having to hide the condition). *4.* Unclear *5.* Yes *6.* No
POST_SH_Images	*7.* Yes, neither/ unclear purpose – It is not clear why the user is sharing the SH image (or they are sharing for reasons not specified below). *8.* Yes, pro-SH images *9.* Yes, anti-SH (incl. pro-recovery) images *10.* No images
POST_Reference_OwnSH	User refers to their own personal SH, whether mention it in a written comment or sharing an image. *0.* Unclear *1.* Yes, in relation to their recovery (or desire to recover), e.g., 4 months clean *2.* Yes, mentioning their SH but not in relation to recovery, e.g., just stating that they are SHing *3.* No
POST_Emotion_Expressed	Emotion expressed refers to the emotion that the user is portraying by writing or reblogging a post. E.g., if they reblog an image depicting a want to commit suicide than I am assuming that they have reblogged this because they relate to it, i.e., it represents something about themself, so this would be coded as negative (unless they add any comments to suggest otherwise). *5.* Negative – The user is expressing negative emotion(s), e.g., frustration, depression,

	hopelessness, tiredness, confusion etc. *6.* Positive – The user is expressing positive emotion(s), e.g., happiness, hopefulness, satisfaction, etc. *7.* Negative and positive – The user is expressing mixed emotions, positive and negative. *8.* No emotion – The user does not appear to be explicitly expressing any emotion in this post.
POST_Support_Offered	*4.* Yes, unclear purpose *5.* Yes, pro-SH – User is offering support to <u>others in a way that encourages self-harm and/or a pro-SH mentality</u>, e.g., portraying SH as a desirable or positive behaviour. *6.* Yes, anti-SH (incl. pro-recovery) – User is offering support <u>to users suffering from SH (or a desire to SH)</u> by providing someone to talk to, offering reassurance, sharing tips to overcome SH etc. The user does not offer support which encourages SH. This includes posts that share links to pro-recovery websites. *7.* No – No support offered.
POST_Support_Requested	*4.* Yes, unclear purpose – User is requesting support but unclear if this is pro-SH, anti-SH/pro-recovery or for another purpose. *5.* Yes, pro-SH – User is requesting support to encourage their SH, e.g., by asking others to support them while they cut, provide pro-SH hints and tips etc. *6.* Yes, anti-SH (incl. pro-recovery) – User is requesting support from others to help him/her overcome their SH, e.g., asking for tips on how to overcome the desire to SH, how to get help, safe alternatives to SH etc. This also includes users asking others for their support against the romanicisation/glorification of SH. *7.* No – No support requested.
POST_Awareness_Others	*1.* Yes – User appears to be sharing content with the aim of raising awareness of issues around SH <u>in others (i.e., general population, friends and family</u>). This can include information regarding awareness of SH prevalence, how to spot the signs of SH, dispelling stereotypes regarding SH (e.g., by raising awareness of who can get SH), sharing newspaper articles etc. This also includes material aimed at 'educating' friends and family about the kind of help that someone with SH needs to help them to recover or recognise their illness. This can also include content that highlights factors which can fuel SH (Exception: does not include content aimed at raising awareness <u>in SH sufferers themselves</u>, e.g., awareness of recovery techniques etc. These would be coded as pro-recovery instead) *2.* No – User does not appear to be sharing content with the aim of raising awareness of issues around SH (as defined above).
POST_Celeb_Music_Influence	Refers to celebrity or musicians in post *3.* Unclear *4.* Yes, unclear relationship to SH Not clear if the user believes that celebrity/music helps improve or worsen SH. *5.* Yes, celeb/music influence IMPROVES SH. User believes that celeb/music influence lessens their and/or others degree of SH. *6.* Yes, celeb/music influence WORSENS SH. User believes that celeb/music influence increases their and/or others

	degree of SH. *7.* No, not referencing celeb/music
POST_Humour	*3.* Unclear – It is unclear whether the user is using humour *4.* Yes – User is using humour in relation to SH, e.g., using SH terms in a flippant manner, using SH as a 'humourous insult', sharing jokes about SH etc. *5.* No – User is not using humour in relation to SH
POST_Against_Humour	User is expressing a dislike of other people referring to SH in a humourous manner. *0.* Unclear *1.* Yes *2.* No

Notes:

Remember with Twitter – the URL will often take you to the person who the user retweeted, and not the users own page. Make sure you visit the users main page too by going to the shortened URL. i.e., visit the full URL to code the POST:
http://twitter.com/username/status/477059201844649984

But also visit the shorter URL to see the users own BLOG i.e.,
http://twitter.com/username/

Appendix F: Published book chapter on study one methodology

Branley, D, **Covey, J** & **Hardey, M** (2014). Online surveys: Investigating social media use and online risk. In SAGE Research Methods Cases. Sage Publications Ltd.

Abstract

This case walks you through a recent study investigating social media use and online risk behaviour. Online surveys have many advantages but they also provide their own unique challenges. By sharing their experiences, the authors highlight the issues that you may face when recruiting for an online survey and offer their advice on how to overcome these obstacles. Topics include: thinking about sample bias, where to recruit online, how to use snowball sampling, overcoming challenges around recruiting minors, and how to design your survey to appeal to potential participants. The demographics of the sample are also discussed.

Contributor biographies

Dawn Branley is a postgraduate researcher within the psychology department at Durham University. Dawn is also a fellow of the Wolfson Research Institute for Health and Wellbeing and is the Psychology Postgraduate Affairs (PsyPAG) representative for the British Psychological Society's North East Branch. Dawn's research is focused upon social media use and engagement in online risk behaviour (e.g., users sharing too much information, engaging in dangerous pranks, sharing embarrassing photos etc.). This case study describes the first stage of Dawn's 3.5-year PhD project. You can follow Dawn's work on Twitter @TheCyberPsyche and via her blog www.thecyberpsyche.wordpress.com

Judith Covey is a lecturer in the department of psychology at Durham University and fellow of the Wolfson Research Institute for Health and Wellbeing. Judith's research is

concerned with how people perceive risks and value benefits in decisions that affect their health or safety.

Mariann Hardey is Programme Director and a Lecturer in Marketing at Durham University Business School. She is a social media professional and academic and the BBC North East commentator for social media and digital networks. In her work Mariann seeks to identify and understand how *real* social relationships are mediated through digital social networks and Web 2.0 applications.

Learning outcomes

- This case walks you through our recent study that used an online survey to collect data on social media use. This study constitutes the first part of a 3.5-year PhD study. We will talk you through some of the methodological issues that we faced during the study. By the end of the case you should have gained a better understanding of the methodological challenges of conducting research through online surveys.
- To understand the influence of sample bias and how this can affect your results.
- To gain an understanding of the online resources available to you during participant recruitment.
- To gain further understanding of how to reach a broader range of participants.
- To be able to recognise and evaluate the pros and cons of using online surveys as a method of data collection.

Introduction

Online surveys have been used since the 1990s however with the emergence of mass social media in the last decade they are now being utilised on a much larger scale. Two of the biggest advantages of using online surveys are their convenience and relatively low cost compared to using methods such as postal or telephone surveys. However, despite these advantages conducting surveys online poses particular challenges when it comes to sample recruitment. This case study highlights these issues by walking you through a recent study investigating social media use and online risk behaviour.

All surveys, whether conducted online or offline, can be prone to sampling bias whereby the sample that has been obtained may not be representative of the intended population. By recruiting online you are clearly restricting your sample towards people that have access to the internet – either through using a computer, tablet or smartphone. The research questions and aims of your study must therefore be suited to this specific target group. As our study aimed to recruit social media users, an online survey was considered appropriate for our research. However, even if internet users are the target population, the specific methods used to recruit respondents can also introduce sampling bias. In this case study we describe five specific techniques we used when conducting our survey which were designed to ensure that a wide range of social media users were represented in our sample.

1. We advertised across a wide variety of online platforms.

In order to reach as many respondents as possible, and to limit biasing your sample, you should aim to advertise across a wide variety of different online platforms bearing in mind the target population that your survey is aimed at. For example, if you recruit solely via Facebook then you cannot generalise your findings to people who use Twitter

as there may be distinct differences between these two platforms and the users that they attract.

The target population for our survey was English speaking social media users over the age of 13. We therefore advertised the study across a wide range of online platforms including:

1) **Websites and forums**, e.g., The GradCafe, University home page, Social Research Forum, The StudentRoom.,

2) **Dedicated participation sites**, e.g., Social Psychology Network, Online Psychology Research.

3) **Social media** including Facebook, Twitter, Instagram and LinkedIn (including LinkedIn research interest groups, e.g., PhD survey support, Psychology students, PhD students, Academia PhD network)

4) **Mailing lists**, e.g., postgraduate mailing lists and research interest mailing lists, e.g., the Association of Internet Researchers mailing list, Psychology Postgraduate Affairs Group mailing list.

5) **Student participation pool**. This is a scheme were university undergraduates participate in postgraduates' studies in order to gain credit to pass to the next stage of their degree. Most universities run a participation pool and this can be a very valuable resource.

It should be noted that all the advertising used for our study was cost-free due to a very limited budget for the research. But of course there are paid options available if you

have a budget to spend. Paid social media adverts on platforms such as Facebook or Twitter are one option. Paid adverts work by directing anyone who clicks on the advert to your website, i.e., your online survey. You are often required to pay a fee per click. You can set a daily limit to ensure you do not exceed your budget however the more you budget per day, the more times your advert is shown on the site, and the more clicks it receives and therefore hopefully the more respondents you recruit! This can soon become a costly affair, especially as not every individual who clicks on the advert will actually take part in the study. You could also place paid adverts on websites and forums to increase your audience. More expensive options for those with a bigger budget could include using an online panel from professional survey organisations such as YouGov (http://research.yougov.co.uk/practices/yougov-panel/).

You can assess which sources are proving to be the most successful by using a bit.ly link to track where people are seeing your advert. Bit.ly (www.bitly.com) is a free service which provides a short alternative website address for your survey and tracks where visitors to your site have come from, e.g., whether they clicked on the link from a social networking site, forum, mailing list etc. It is very quick and easy to use and can provide valuable insights about the specific characteristics of your sample. For example, using the bit.ly link showed us that the three most effective social networking sites, in terms of the number of people clicking on the link to our study, were Facebook, LinkedIn and Twitter.

2. We used snowball sampling

Snowball sampling refers to recruiting respondents by asking existing respondents to recommend the study to their acquaintances, i.e., friends, family and colleagues. This technique helps the sample to grow further each time respondents roll out the

information to their social network, i.e., the numbers grow in size like a rolling snowball hence the term snowball sampling.

We utilised snowball sampling to reach as many potential respondents as possible. This is a particularly effective method when used via social media such as Facebook or Twitter as social media enables respondents to easily and conveniently share the study with everyone in their social circle, e.g., by 'sharing' on Facebook or 'Retweeting' on Twitter.

You can also look for social media groups who may be happy for you to share details of your study on their page. For example, Facebook and LinkedIn often have many groups dedicated to research and respondent recruitment. You may also find that Twitter groups from your local area, or those that share a common interest within your research area, will be happy to share a link to your survey. Likewise, it is always worth checking whether your college, university or organisation have any social media accounts and if they would be happy to share your survey information. A few retweets can rapidly increase your audience by hundreds, or even thousands of people. For example, if just one person retweets your link to their 100 followers, and then just 10% of those people retweet to another 100 followers each, you have already reached 1100 additional potential respondents in just two little steps, imagine if the retweets continue to their followers, and their followers etc.

3. We recruited minors through schools

The target population for our survey included minors (13-15 years). One of the main challenges we faced in recruiting respondents from this age group was the requirement (stipulated by the institutional ethics approval for our study) to obtain parental consent prior to collecting data. We therefore needed to recruit the minors via their parents. This

can be achieved by aiming participation adverts directly at parents or by contacting parents via organisations such as youth clubs and schools. We opted for the latter and contacted schools to ask if they were interested in participating. Paper information sheets were then dispatched to those schools that consented to take part; the staff then distributed these sheets to the pupils' parents.

Rather than relying upon traditional paper consent forms, we designed an online alternative. The information sheets initially distributed to the parents included the website address for the online consent form. The form asked parents to input their name and their child's name, and to sign to indicate their consent for their child to take part in the study. In order to obtain an actual signature from the parents, we designed a form that incorporated a signature box feature to allow parents to sign using their mouse (or finger if using a smartphone or tablet). This was implemented by using Formstack (http://www.formstack.com), a paid service which costs approx. £7 per month on a pay as you go basis. Formstack offer a discount for student users.

By using an online consent form, the involvement of the school was greatly reduced, both in terms of staff time and class disruption. Minimising schools' and organisations' involvement will greatly increase the attractiveness of participating in the research. Whilst many schools and organisations would like to help with research, they are often working to a very tight timescale and cannot always afford to dedicate large chunks of time and staff resources to supporting research projects. Therefore minimising the involvement required on their behalf will greatly increase the numbers of schools and/or organisations that agree to participate.

Using the online consent forms also saved time for the research team, as we did not have to wait for paper forms being returned and receipt of the electronic forms is

instantaneous. This also ruled out any forms accidently being misplaced during the journey from parent to school and then school to the research team.

Once parents had completed the online consent form they were informed to pass on the information sheet and survey website address to their child to enable them to access the survey. Please note: children must also provide informed consent prior to taking part even if parental consent has already been obtained (they can do this by ticking the consent box when they access the survey website).

One of the ethical issues we encountered was how to prevent minors completing the questionnaire without consent. It can be very difficult to verify age using an online survey. Although we explicitly stated that respondents must be over 16 years of age to take part (unless they were recruited via schools as previously discussed), this was reliant upon the respondent being truthful about their age. However, it is not realistic to expect to completely eliminate the possibility that minors may take part in the study – something that is recognised by the British Psychological Society guidelines on internet research. Therefore if you are considering an online survey that is of an explicit or potentially disturbing nature to minors, you may wish to consider if another method would be more appropriate.

There are other methods to try to prevent minors accessing your survey. For example it is possible to set up a credit card verification system, but this is time consuming and costly and will likely discourage respondents from taking part. An alternative method is to enable the questionnaire to be open to all ages but set up filtering or branch logic. This allows the researcher to design the survey to change according to the responses given by respondents, i.e., it is possible to set up the survey to show different (or less) content, for respondents who give an age under 16 years. Therefore any questions with adult content can be hidden from minors. This method may result in respondents being

truthful about their age, as there is no obvious reason to be dishonest due to there being no minimum age requirement. Therefore this method may be more effective in protecting minors from viewing potentially harmful or distressing material than simply prohibiting them from participating.

4. We offered an incentive as a thank you for their time.

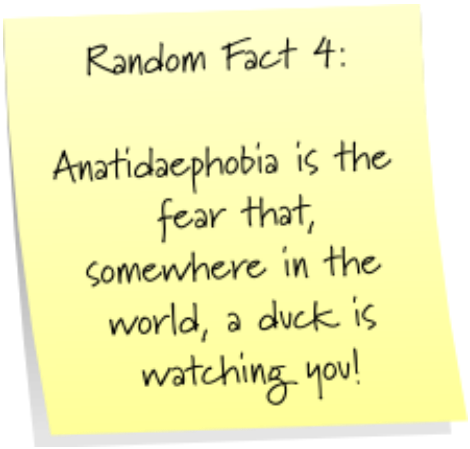
Accessing potential respondents is one thing but encouraging them to start and complete the survey is another challenge. The first technique we used in our study was to offer a small incentive in the form of a prize draw. All respondents who completed the study were eligible to be entered into a draw to win a £50 Amazon voucher. This prize was offered as a thank you for respondents' time as the survey was quite lengthy and took respondents approximately 30 minutes to complete. If you do decide to offer an incentive, you must ensure that the value is reasonable and appropriate to the participation involved. Disproportionately large rewards might be regarded as a form of coercion, i.e., influencing the respondent's decision to take part.

We found Amazon vouchers to be well received by the respondents and also convenient for the researchers; e-vouchers can be conveniently emailed to the winner thereby avoiding the need for respondents to disclose their postal address. This also saves time and delivery costs.

5. We made the survey interesting

Sampling biases can also be introduced by non-completion of the survey. Getting respondents to the very end can be a challenge with long a survey such as ours and our

approach to retaining the respondents' interest was to add random, interesting and humorous facts throughout the survey. Below is one of the examples we used.



This proved to a popular technique and many respondents provided feedback to say that they had really enjoyed this feature, e.g., one participant recommended the study to her Facebook friends quoting the above random fact about Anatidaephobia and saying that she "loved it [the study] and thought it was fun". Therefore participants seemed more likely to recommend the study to their friends as a result of this technique.

The success of these techniques lies in the sample recruited for the survey and whether it represents a wide range of social media users. As noted previously our target population was individuals over 13 years of age, who were fluent English speakers and who had used social media at least once in the last 3 months.

Over a four-month recruitment period we collected data from a total 1228 respondents. However participants who did not proceed past the first page of the survey (the demographic questions) were excluded, leaving a final sample size of 1077 participants. The demographics of this sample are shown in Table 1.

Table 1. Demographic characteristics of sample (N=1077)

		N	Percentage
Age	Under 18yrs	128	11.9
	18 – 25 yrs	407	37.8
	26 – 39 yrs	360	33.4
	40 – 49 yrs	102	9.5
	50 yrs +	80	7.4
Gender	Male	330	30.6
	Female	747	69.4
Country	United Kingdom	543	50.4
	United States of America	236	21.9
	Canada	58	5.4
	Other (58 countries each < 3%)	240	22.3

Social media can enable researchers to recruit an international sample with relative ease compared to traditional recruitment methods. This is reflected in our data with responses from 61 different countries including Afghanistan, Guyana, Slovakia and Uganda. Although the UK, USA and Canada make up the majority of the sample this is likely to be a reflection of the websites where the study was advertised. By using a more diverse range of online sources and offering the survey in multiple languages, it would be possible to widen the scope of recruitment as required.

The sample included many more females than males but this is representative of internet and social media users (Kimbrough et al., 2013) and was not considered problematic for the current study. Social media like Facebook and Twitter is generally dominated by

females therefore recruiting solely through this method will tend to recruit more female users. Other platforms such as sports or games forums may reach a bigger proportion of male users. It is worth noting that recruitment may take longer if you wish to recruit a very large number of male respondents via an online survey. You may find it beneficial to consider where you advertise your study in relation to the gender you wish to recruit.

In addition to gender, recruiting online can also affect the age of the sample you collect. The sample for this study consisted of respondents from 13 years (the minimum age for participation) to 80 years. This demonstrates that it *is* possible to recruit from a wide age range online. However, the age demographic was weighted towards the lower age ranges with over 83% of the sample under 40 years of age. According to research by the Pew Internet and American Life Project (http://pewinternet.org) this is reflective of social media users as a whole and as this was our target demographic this was not a concern for our study. However it is important that you consider whether this could be a problem for your own research.

Respondents within our sample were using a wide range of social media applications (Table 2). However, Facebook was used by over 90% of our respondents. Again, the patterns shown within the data are largely representative of the popularity of the individual social media sites, with Facebook generally having the largest membership rates (See Beese, 2013; Lenhart, Purcell, Smith & Zickuhr, 2010). This does not pose a problem for our research, however if you are wishing to target non-Facebook users you may find that recruitment using an online survey takes longer and may prove more difficult.

Table 2. Types of social media applications used by our sample

	N	%
Facebook	990	92.0
Twitter	689	64.0
YouTube	664	61.7
LinkedIn	383	35.6
Instagram	366	34.0
Google+	319	29.6
Tumblr	253	23.5
Pinterest	238	22.1
WordPress	150	13.9
Flickr	114	10.6
Blogger	96	8.9
Photobucket	92	8.6
FourSquare	59	5.5
Vimeo	44	4.1
LiveJournal	41	3.8
GoogleLat	34	3.2
MySpace	31	2.9
Tagged	14	1.3

Note: Applications accounting for <1% have been excluded.

In summary

Online surveys can be a very valuable tool providing that they are appropriate for the research involved, for example when the target population can be effectively reached using this method. We have discussed the demographics of our sample in order to help you make an informed decision regarding whether an online survey will meet your requirements.

In this case study we have also walked you through some of the issues that we encountered whilst recruiting participants, and have passed on our hints and tips. We hope that this has provided you with deeper insight into what your own study may entail and may help you to avoid some of the potential pitfalls along the way.

Exercises and Questions

1. Can you think of at least three ways in which sample bias could affect the results of your study? To what degree would this affect the appropriateness of an online survey as a method for your own research?
2. In order to recruit more participants we used snowball sampling, can you think of any disadvantages of using this method?
3. During recruitment we advertised the study on many student dedicated websites, e.g., postgraduate student forums and the university participant pool website. What strengths and weaknesses can you identify with this approach?
4. Can you think of any other online resources that we could have used to recruit a wider range of participants?

Useful Links

Association of Internet Researchers mailing list:

http://listserv.aoir.org/listinfo.cgi/air-l-aoir.org

Bit.ly: http://bit.ly.com

British Psychological Guidelines for ethical practice in psychological research online:

http://www.bps.org.uk/sites/default/files/documents/conducting_research_on_the_internet-guidelines_for_ethical_practice_in_psychological_research_online.pdf

Formstack: http://www.formstack.com

Online Psychology Research: http://www.onlinepsychresearch.co.uk/

Psychology Postgraduate Affairs Group (incl. mailing list):

http://www.psypag.co.uk/

Social Psychology Network: http://www.socialpsychology.org/

Social Research Forum: http://www.socphd.co.uk/

The Student Room: http://www.thestudentroom.co.uk/

Wordpress: http://www.wordpress.com